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July 12, 2005

BY OVERNIGHT DELIVERY AND E-FILE

Mary L. Cottrell, Secretary  
Department of Telecommunications and Energy  
One South Station  
Boston, MA 02110

Re: Bay State Gas Company, D.T.E. 05-27

Dear Ms. Cottrell:

Enclosed for filing, on behalf of Bay State Gas Company ("Bay State"), please find Bay State's responses to the following Record Requests:

From the Attorney General:

RR-AG-1	RR-AG-3	RR-AG-8	RR-AG-11	RR-AG-12
RR-AG-13	RR-AG-14	RR-AG-15	RR-AG-18	RR-AG-21
RR-AG-22	RR-AG-23	RR-AG-27		

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From the Department:

RR-DTE-3	RR-DTE-4	RR-DTE-6	RR-DTE-8	RR-DTE-9
RR-DTE-10	RR-DTE-11	RR-DTE-12	RR-DTE-13	RR-DTE-24
RR-DTE-25				

Please do not hesitate to telephone me with any questions whatsoever.

Very truly yours,

Patricia M. French

cc: Per Ground Rules Memorandum issued June 13, 2005:

Paul E. Osborne, Assistant Director – Rates and Rev. Requirements Div. (1 copy)

A. John Sullivan, Rates and Rev. Requirements Div. (4 copies)

Andreas Thanos, Assistant Director, Gas Division (1 copy)

Alexander Cochis, Assistant Attorney General (4 copies)

Service List (1 electronic copy)

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-AG-1: Did Bay State Gas ever contact the Company responsible for the coatings on the Company's distribution system to discuss coating failures?

Response: The Company has no specific knowledge of Bay State contacting the company or companies responsible for the coatings on the Company's unprotected steel mains and services.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-AG-3: Provide title and job description of Harris Marple.

Response: Harris Marple is Senior Vice President of NiSource. Specifically, the General Managers of Bay State Gas Company, Northern Utilities, Northern Indiana Public Service, Columbia Gas of Ohio, Kentucky, Pennsylvania and Maryland; Kokomo Gas and Northern Indiana Fuel and Light report to Mr. Marple. In addition, all support and technical operations and new business process leaders report to him.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-8: Will increase in plant (bare-steel) increase the percentage of expense allocated to BSG under the 3-part formula?

Response: Holding all other things constant, an increase in the amount of Bay State plant investment will increase the amount of expense allocated to Bay State. The same was true for Northern – NH during the 1990's, when Northern was engaged in an accelerated steel replacement program in NH.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-11: Who installed Metscan devices - outside or inside people?

Response: Both the Metscan devices and the Itron devices were installed were installed using Company employees.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-12: Provide information on how company booked refunds to customers related to Metscan devices during the test year.

Response: The customer refunds that were related to the removal of the Metscan device and installation of the Itron device were capitalized as part of the Itron installation.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-13: Did Fleet provide cash or some other form of compensation for the  
Metscan reading devices in 1998?

Response: Fleet provided cash to Bay State.



COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-14: Relating to RR-AG-13, was compensation received back by the Company greater than the value held on the books?

Response: The compensation that Bay State received was equal to the net book value of the meter reading equipment.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-15: Was a cost-benefit analysis provided at the time Metscan was leased? If so, provide.

Response: Attachments RR-AG-15 (a), RR-AG-15 (b) and RR-AG-15 (c) are cost benefit analyses for the three Metscan leases.

# **Attachment RR-AG-15 (a)**

[illegible][illegible]

## 2. NPV of Leasing

[illegible]

### Purchase

Net earnings per share impact	13,508.074																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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**Company Owned Metscan Devices**  
**Pretax Cashflows**

Bay State Gas Company  
 Discount rate  
 Period  
 D.T.E. 05-27  
 DRAG-15 (a)  
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[illegible]

**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**IRR of Lease Proposal**  
**Company Owned Metscan Devices**

**Fleet Capital Leasing**

Months	1	65	53	1
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Outflows	(18,077,749)			
Inflows	157,698	10,250,346	10,214,046	4,447,858
Net cash flows	(17,920,052)	10,250,346	10,214,046	4,447,858

IRR 5.76%

pmt 1st 66 mo.s	157,698	1	(17,920,052)
pmt 2nd 66 mo.s	192,718	65	157,698
epo	4,255,141	65	192,718
5% restock	(903,887)	1	2,181,270
11% residual	1,988,552		5.65%

1	(17,920,052)
65	157,698
53	192,718
1	4,491,607
	5.76%

**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**FASB 13 Operating lease Criteria**  
**Company Owned Metscan Devices**

Bay State Gas Company  
D.T.E. 05-27  
Attachment RR-AG-15 (a)  
Page 6 of 11

**Fleet Capital Leasing**

Periods (Months)	1	65	66
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**1. NPV of lease pmts:**

Fair Market Value of Asset 18,077,749

Lease payments	157,698	157,698	1,096,605
less: executory costs	(7,885)	(7,885)	(9,636)
Net (outflows)/inflows	149,813	149,813	1,086,969

NPV of lease pmts	15,817,500	87.50%	
not to exceed	16,269,974	90.00%	<b>OK</b>

**2. Remaining life of asset after lease:**

Remaining asset life (years)	19	
Lease duration (years)	11.00	
Lease duration as % of asset life	59%	
Remaining life after lease (years)	8	
Remain life as % of asset life	41%	<b>OK</b>

**3. Ownership of asset being leased**

Lessee (BSG) has no equity position in the asset	<b>OK</b>
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**4. End of lease bargain purchase option**

There is no end of lease purchase option	<b>OK</b>
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Assumptions	
Lease payments	1,892,372
Alt Borrowing rate	6.5%
Executory expense % of lse pmt	5%
Term of lease in years	11

FASB 13 Calc'n	
FMV	18,077,749
NPV of lease pmts	15,817,500
NPV of lease pmt / FMV as	87.50%

Bay State Gas Company  
D.T.E. 05-27  
Attachment RR-AG-15 (a)  
Page 7 of 11

Alt borrowing rate: 7 yr T @ 5.92 + 60bp= 6.52%

Month	Payment	Executory Expense	Restocking Fee	Total Payment	Present Value Factor	P.V. of Total Payment	Cash Flows
1	\$157,697.63	\$7,884.88	\$0.00	\$149,812.75	0.9946	\$149,003.16	\$149,812.75
2	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9892	148,197.95	149,812.75
3	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9839	147,397.10	149,812.75
4	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9786	146,600.57	149,812.75
5	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9733	145,808.34	149,812.75
6	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9680	145,020.40	149,812.75
7	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9628	144,236.71	149,812.75
8	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9576	143,457.26	149,812.75
9	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9524	142,682.02	149,812.75
10	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9473	141,910.97	149,812.75
11	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9421	141,144.09	149,812.75
12	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9370	140,381.35	149,812.75
13	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9320	139,622.73	149,812.75
14	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9269	138,868.22	149,812.75
15	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9219	138,117.78	149,812.75
16	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9170	137,371.39	149,812.75
17	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9120	136,629.04	149,812.75
18	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9071	135,890.70	149,812.75
19	\$157,697.63	\$7,884.88	0.00	149,812.75	0.9022	135,156.35	149,812.75
20	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8973	134,425.97	149,812.75
21	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8924	133,699.54	149,812.75
22	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8876	132,977.03	149,812.75
23	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8828	132,258.42	149,812.75
24	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8781	131,543.70	149,812.75
25	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8733	130,832.84	149,812.75
26	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8686	130,125.83	149,812.75
27	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8639	129,422.63	149,812.75
28	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8592	128,723.24	149,812.75
29	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8546	128,027.62	149,812.75
30	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8500	127,335.76	149,812.75
31	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8454	126,647.64	149,812.75
32	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8408	125,963.24	149,812.75
33	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8363	125,282.54	149,812.75
34	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8317	124,605.52	149,812.75
35	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8272	123,932.15	149,812.75
36	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8228	123,262.43	149,812.75
37	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8183	122,596.32	149,812.75
38	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8139	121,933.81	149,812.75
39	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8095	121,274.89	149,812.75
40	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8051	120,619.52	149,812.75
41	\$157,697.63	\$7,884.88	0.00	149,812.75	0.8008	119,967.69	149,812.75
42	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7965	119,319.39	149,812.75
43	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7922	118,674.59	149,812.75
44	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7879	118,033.28	149,812.75
45	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7836	117,395.43	149,812.75
46	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7794	116,761.03	149,812.75
47	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7752	116,130.06	149,812.75
48	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7710	115,502.49	149,812.75
49	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7668	114,878.32	149,812.75
50	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7627	114,257.52	149,812.75
51	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7585	113,640.08	149,812.75
52	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7544	113,025.97	149,812.75
53	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7504	112,415.18	149,812.75
54	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7463	111,807.69	149,812.75
55	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7423	111,203.49	149,812.75
56	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7383	110,602.55	149,812.75
57	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7343	110,004.85	149,812.75
58	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7303	109,410.39	149,812.75
59	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7264	108,819.14	149,812.75
60	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7224	108,231.08	149,812.75

61	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7103	107,064.49	149,812.75
62	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7147	107,064.49	149,812.75
63	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7108	106,485.92	149,812.75
64	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7070	105,910.47	149,812.75
65	\$157,697.63	\$7,884.88	0.00	149,812.75	0.7031	105,338.13	149,812.75
66	\$157,697.63	\$7,884.88	0.00	149,812.75	0.6993	104,768.89	149,812.75
67	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6956	127,343.21	183,081.95
68	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6918	126,655.05	183,081.95
69	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6881	125,970.61	183,081.95
70	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6843	125,289.87	183,081.95
71	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6806	124,612.81	183,081.95
72	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6770	123,939.41	183,081.95
73	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6733	123,269.64	183,081.95
74	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6697	122,603.49	183,081.95
75	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6660	121,940.95	183,081.95
76	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6624	121,281.98	183,081.95
77	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6589	120,626.58	183,081.95
78	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6553	119,974.72	183,081.95
79	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6518	119,326.38	183,081.95
80	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6482	118,681.54	183,081.95
81	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6447	118,040.19	183,081.95
82	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6413	117,402.30	183,081.95
83	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6378	116,767.86	183,081.95
84	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6343	116,136.85	183,081.95
85	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6309	115,509.25	183,081.95
86	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6275	114,885.04	183,081.95
87	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6241	114,264.21	183,081.95
88	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6207	113,646.73	183,081.95
89	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6174	113,032.58	183,081.95
90	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6141	112,421.76	183,081.95
91	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6107	111,814.24	183,081.95
92	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6074	111,210.00	183,081.95
93	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6042	110,609.02	183,081.95
94	\$192,717.84	\$9,635.89	0.00	183,081.95	0.6009	110,011.29	183,081.95
95	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5976	109,416.79	183,081.95
96	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5944	108,825.51	183,081.95
97	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5912	108,237.42	183,081.95
98	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5880	107,652.51	183,081.95
99	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5848	107,070.76	183,081.95
100	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5817	106,492.15	183,081.95
101	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5785	105,916.67	183,081.95
102	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5754	105,344.30	183,081.95
103	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5723	104,775.02	183,081.95
104	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5692	104,208.82	183,081.95
105	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5661	103,645.68	183,081.95
106	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5631	103,085.58	183,081.95
107	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5600	102,528.51	183,081.95
108	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5570	101,974.45	183,081.95
109	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5540	101,423.38	183,081.95
110	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5510	100,875.29	183,081.95
111	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5480	100,330.16	183,081.95
112	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5450	99,787.98	183,081.95
113	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5421	99,248.73	183,081.95
114	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5392	98,712.39	183,081.95
115	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5363	98,178.95	183,081.95
116	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5334	97,648.40	183,081.95
117	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5305	97,120.71	183,081.95
118	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5276	96,595.87	183,081.95
119	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5248	96,073.87	183,081.95
120	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5219	95,554.69	183,081.95
121	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5191	95,038.31	183,081.95
122	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5163	94,524.73	183,081.95
123	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5135	94,013.92	183,081.95
124	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5107	93,505.87	183,081.95
125	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5080	93,000.57	183,081.95
126	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5052	92,498.00	183,081.95
127	\$192,717.84	\$9,635.89	0.00	183,081.95	0.5025	91,998.14	183,081.95
128	\$192,717.84	\$9,635.89	0.00	183,081.95	0.4998	91,500.98	183,081.95
129	\$192,717.84	\$9,635.89	0.00	183,081.95	0.4971	91,006.52	183,081.95
130	\$192,717.84	\$9,635.89	0.00	183,081.95	0.4944	90,514.72	183,081.95
131	\$192,717.84	\$9,635.89	0.00	183,081.95	0.4917	90,025.58	183,081.95
132	\$192,717.84	\$9,635.89	903,887.46	1,086,969.40	0.4891	531,599.35	1,086,969.40
TOTAL						15,817,500	

**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**Adjusted Net Book Value Versus Net Tax Value**  
**Company Owned Metscan**

Tax Life	Years Depr Book Life	Year	Cash Value	Book Reserve Balance	Net Book Value	Tax Depreciation Balance	Net Tax Value	Difference Book/Tax	Ordinary Gain
2	2	1995	4,013,330	544,465	3,468,865	802,666	3,210,664	258,201	258,201
1	1	1996	6,779,886	394,194	6,385,692	2,640,243	4,139,643	2,246,049	2,504,250
0	0	1997	8,223,192	0	8,223,192	0	8,223,192	0	2,504,250
Total			\$19,016,408	\$938,659	\$18,077,749	\$3,442,909	\$15,573,499	\$2,504,250	

Average age of devices Average remaining life 25% of useful life Years to be leased	1 19 5 14	Monthly	Yearly	Lease	Buyout	Buyout	Buyout
		Term	Term	Factor	Month	Year	%
		66	5.5	0.0087233	120	10.00	23.78%
		66	5.5	0.0106605	120	10.00	23.78%

Bay State Gas Company & Subsidiaries  
Meisican Analysis - Plant Additions 9/30/97

Bay State Gas Company  
Attachment  
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Calendar Year	397	397	397	303	397	397	Total	Cumulative
	Brookton	Springfield	Westborough	Westborough	Lawrence	Portsmouth		
1987	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1988	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1989	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1990	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1991	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1992	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1993	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1994	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1995	2,080,082.64	1,286,119.07	96,816.72	21,614.00	528,697.88	0.00	4,013,330.31	4,013,330.31
1996	3,290,191.86	2,349,663.89	217,757.18	0.00	922,271.37	0.00	6,779,886.32	10,793,216.63
1997	8,223,192.32	3,635,782.96	314,673.90	21,614.00	1,450,969.25	0.00	8,223,192.32	19,016,408.95
1998	13,593,468.84						19,016,408.95	

Bay State Gas Company & Subsidiaries  
Communications Equipment - Depreciation  
Macrs Half-Year Convention

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	TOTAL	Cumulative
20.00%	1987											0.00	0.00
32.00%	1988											0.00	0.00
19.20%	1989											0.00	0.00
11.52%	1990											0.00	0.00
11.52%	1991											0.00	0.00
5.76%	1992											0.00	0.00
100.00%	1993											0.00	0.00
	1994											0.00	0.00
	1995											0.00	0.00
	1996											0.00	0.00
	1997											0.00	0.00
	1998											0.00	0.00
	1999											0.00	0.00
	2000											0.00	0.00
	2001											0.00	0.00
	2002											0.00	0.00

Bay State Gas Company & Subsidiaries  
Meisican Analysis - Tax Book Value 9/30/97

	Plant	Reserve	Net Tax
1987	0.00	0.00	0.00
1988	0.00	0.00	0.00
1989	0.00	0.00	0.00
1990	0.00	0.00	0.00
1991	0.00	0.00	0.00
1992	0.00	0.00	0.00
1993	0.00	0.00	0.00
1994	0.00	0.00	0.00
1995	4,013,330.31	802,666.06	3,210,664.25
1996	10,793,216.63	3,442,909.03	7,350,307.60
1997	19,016,408.95	8,027,670.53	10,988,738.42
1998	19,016,408.95	12,423,165.90	6,593,243.05
1999	19,016,408.95	15,245,397.38	3,771,011.57
2000	19,016,408.95	17,204,919.87	1,811,489.08
2001	19,016,408.95	18,542,753.07	473,655.88
2002	19,016,408.95	19,016,408.95	0.00

Local Transportation Massachusetts  
Capital Structure

Class of Capital (1)	Actual Capital (2)	Percent of Total Capital (3)	Cost Rate of Capital (4)	Weighted Cost of Capital (5)
Long Term Debt	188,500,000	42.78%	7.51%	3.21%
Preferred Stock	5,010,050	1.14%	5.75%	0.07%
Common Stock	247,081,069	56.08%	11.50%	6.45%
Total Capitalization	440,591,119			9.73%

Long Term Debt After Tax	1.95%
Preferred Stock	0.07%
Common Stock	6.45%
Total Capitalization	8.47%

# Attachment RR-AG-15 (b)

[illegible]

## 2. NPV of Leasing

[illegible]

[illegible]



**Bay State Gas Company  
Utility Business Segment Massachusetts  
Lease Versus Own Analysis  
Company Owned Melscan Devices  
Pretax Cashflows**

[illegible]

**Bay State Gas Company  
Utility Business Segment Massachusetts  
IRR of Lease Proposal  
Company Owned Metscan Devices 2ND Sale**

**Fleet Capital Leasing**

Months	1	65	53	1
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Outflows	(3,907,724)			
Inflows	33,499	2,177,455	2,169,746	961,989
Net cash flows	(3,874,225)	2,177,455	2,169,746	961,989

IRR 5.46%

pmt 1st 66 mo.s	33,499	1	(3,874,225)	end of lease
pmt 2nd 66 mo.s	40,939	65	33,499	
epo	921,051	65	40,939	
5% restock	195,386	1	470,788	
11% residual	429,850		5.36%	

1	(3,874,225)	early buyout option
65	33,499	
53	40,939	
1	961,989	actual buyout %
120	5.46%	

Bay State Gas Company  
D.T.E. 05-27  
Attachment RR-AG-15 (b)  
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There is no end of lease purchase option OK

Assumptions	
Lease payments	401,992
Alt Borrowing rate	6.5%
Executory expense % of lse pmt	5%
Term of lease in years	11

FASB 13 Calc'n	
FMV	3,907,724
NPV of lease pmts	3,361,724
NPV of lease pmt / FMV as	86.03%

Bay State Gas Company  
D.T.E. 05-27  
Attachment RR-AG-15 (b)  
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Alt borrowing rate: 7 yr T @ 5.92 + 60bp= 6.52%

Month	Payment	Executory Expense	Restocking Fee	Total Payment	Present Value Factor	P.V. of Total Payment	Cash Flows
1	\$33,499.31	\$1,674.97	\$0.00	\$31,824.35	0.9946	\$31,652.37	\$31,824.35
2	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9892	31,481.32	31,824.35
3	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9839	31,311.20	31,824.35
4	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9786	31,141.99	31,824.35
5	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9733	30,973.70	31,824.35
6	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9680	30,806.32	31,824.35
7	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9628	30,639.84	31,824.35
8	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9576	30,474.27	31,824.35
9	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9524	30,309.58	31,824.35
10	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9473	30,145.79	31,824.35
11	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9421	29,982.88	31,824.35
12	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9370	29,820.86	31,824.35
13	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9320	29,659.71	31,824.35
14	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9269	29,499.43	31,824.35
15	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9219	29,340.01	31,824.35
16	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9170	29,181.46	31,824.35
17	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9120	29,023.76	31,824.35
18	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9071	28,866.92	31,824.35
19	\$33,499.31	\$1,674.97	0.00	31,824.35	0.9022	28,710.92	31,824.35
20	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8973	28,555.77	31,824.35
21	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8924	28,401.46	31,824.35
22	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8876	28,247.98	31,824.35
23	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8828	28,095.32	31,824.35
24	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8781	27,943.50	31,824.35
25	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8733	27,792.49	31,824.35
26	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8686	27,642.30	31,824.35
27	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8639	27,492.92	31,824.35
28	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8592	27,344.35	31,824.35
29	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8546	27,196.59	31,824.35
30	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8500	27,049.62	31,824.35
31	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8454	26,903.44	31,824.35
32	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8408	26,758.06	31,824.35
33	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8363	26,613.46	31,824.35
34	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8317	26,469.64	31,824.35
35	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8272	26,326.60	31,824.35
36	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8228	26,184.33	31,824.35
37	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8183	26,042.83	31,824.35
38	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8139	25,902.09	31,824.35
39	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8095	25,762.12	31,824.35
40	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8051	25,622.90	31,824.35
41	\$33,499.31	\$1,674.97	0.00	31,824.35	0.8008	25,484.44	31,824.35
42	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7965	25,346.72	31,824.35
43	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7922	25,209.75	31,824.35
44	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7879	25,073.51	31,824.35
45	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7836	24,938.02	31,824.35
46	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7794	24,803.25	31,824.35
47	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7752	24,669.22	31,824.35
48	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7710	24,535.90	31,824.35
49	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7668	24,403.31	31,824.35
50	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7627	24,271.44	31,824.35
51	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7585	24,140.28	31,824.35
52	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7544	24,009.82	31,824.35
53	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7504	23,880.07	31,824.35
54	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7463	23,751.03	31,824.35
55	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7423	23,622.68	31,824.35
56	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7383	23,495.02	31,824.35
57	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7343	23,368.05	31,824.35
58	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7303	23,241.77	31,824.35
59	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7264	23,116.18	31,824.35
60	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7224	22,991.26	31,824.35

61	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7103	22,007.01	31,824.35
62	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7147	22,743.44	31,824.35
63	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7108	22,620.54	31,824.35
64	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7070	22,498.29	31,824.35
65	\$33,499.31	\$1,674.97	0.00	31,824.35	0.7031	22,376.71	31,824.35
66	\$33,499.31	\$1,674.97	0.00	31,824.35	0.6993	22,255.79	31,824.35
67	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6956	27,051.22	38,891.67
68	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6918	26,905.04	38,891.67
69	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6881	26,759.64	38,891.67
70	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6843	26,615.04	38,891.67
71	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6806	26,471.21	38,891.67
72	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6770	26,328.16	38,891.67
73	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6733	26,185.88	38,891.67
74	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6697	26,044.37	38,891.67
75	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6660	25,903.63	38,891.67
76	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6624	25,763.65	38,891.67
77	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6589	25,624.42	38,891.67
78	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6553	25,485.95	38,891.67
79	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6518	25,348.22	38,891.67
80	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6482	25,211.24	38,891.67
81	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6447	25,075.00	38,891.67
82	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6413	24,939.50	38,891.67
83	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6378	24,804.73	38,891.67
84	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6343	24,670.68	38,891.67
85	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6309	24,537.36	38,891.67
86	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6275	24,404.76	38,891.67
87	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6241	24,272.88	38,891.67
88	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6207	24,141.71	38,891.67
89	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6174	24,011.25	38,891.67
90	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6141	23,881.49	38,891.67
91	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6107	23,752.44	38,891.67
92	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6074	23,624.08	38,891.67
93	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6042	23,496.42	38,891.67
94	\$40,938.60	\$2,046.93	0.00	38,891.67	0.6009	23,369.44	38,891.67
95	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5976	23,243.15	38,891.67
96	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5944	23,117.55	38,891.67
97	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5912	22,992.62	38,891.67
98	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5880	22,868.37	38,891.67
99	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5848	22,744.79	38,891.67
100	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5817	22,621.88	38,891.67
101	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5785	22,499.63	38,891.67
102	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5754	22,378.04	38,891.67
103	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5723	22,257.11	38,891.67
104	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5692	22,136.84	38,891.67
105	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5661	22,017.21	38,891.67
106	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5631	21,898.23	38,891.67
107	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5600	21,779.89	38,891.67
108	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5570	21,662.19	38,891.67
109	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5540	21,545.13	38,891.67
110	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5510	21,428.70	38,891.67
111	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5480	21,312.90	38,891.67
112	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5450	21,197.73	38,891.67
113	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5421	21,083.18	38,891.67
114	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5392	20,969.24	38,891.67
115	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5363	20,855.93	38,891.67
116	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5334	20,743.22	38,891.67
117	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5305	20,631.13	38,891.67
118	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5276	20,519.64	38,891.67
119	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5248	20,408.75	38,891.67
120	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5219	20,298.46	38,891.67
121	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5191	20,188.77	38,891.67
122	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5163	20,079.67	38,891.67
123	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5135	19,971.16	38,891.67
124	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5107	19,863.23	38,891.67
125	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5080	19,755.89	38,891.67
126	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5052	19,649.13	38,891.67
127	\$40,938.60	\$2,046.93	0.00	38,891.67	0.5025	19,542.95	38,891.67
128	\$40,938.60	\$2,046.93	0.00	38,891.67	0.4998	19,437.34	38,891.67
129	\$40,938.60	\$2,046.93	0.00	38,891.67	0.4971	19,332.30	38,891.67
130	\$40,938.60	\$2,046.93	0.00	38,891.67	0.4944	19,227.83	38,891.67
131	\$40,938.60	\$2,046.93	0.00	38,891.67	0.4917	19,123.92	38,891.67
132	\$40,938.60	\$2,046.93	195,386.20	234,277.87	0.4891	114,577.25	234,277.87
TOTAL						3,361,724	

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**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**Adjusted Net Book Value Versus Net Tax Value**  
**Company Owned Metscan 2nd Sale**

	Years Depr		Book	Net	Tax	Net	Difference	Ordinary
Tax	Book		Reserve	Book	Depreciation	Tax	Book/Tax	Gain
Life	Life	Year	Balance	Value	Balance	Value		
0	0	1997	0	3,907,724	0	3,907,724	0	0
Nov - Dec '97								
Total			\$3,907,724	\$0	\$3,907,724	\$0	\$3,907,724	\$0

Average age of devices	20	Monthly Term	Yearly Term	Lease Factor	Buyout Month	Buyout Year	Buyout %
		66	5.5	0.008572589	120	10.00	23.57%
Average remaining life	20						
25% of useful life	5	66	5.5	0.010476329	120	10.00	23.57%
Years avail to lease	15						

Bay State Gas Company & Subsidiaries  
Meiscan Analysis - Plant Additions 9/30/97

Calendar Year	397	397	397	303	397	397	Total	Cumulative
	Massachusetts	Springfield	Westborough	Westborough	Lawrence	Portsmouth		
	3,907,723.83	0.00	0.00	0.00	0.00	0.00	3,907,723.83	3,907,723.83

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<u>3,907,723.83</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>3,907,723.83</u>
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Bay State Gas Company & Subsidiaries  
Communications Equipment - Depreciation  
Macrs Half-Year Convention

Year	1997	1998	1999	2000	2001	2002	2003	TOTAL	Cumulative
20.00%	1997							781,544.77	781,544.77
32.00%	1998	781,545						1,250,471.63	2,032,016.39
19.20%	1999		1,250,472					750,282.98	2,782,299.37
11.52%	2000			750,283				450,169.79	3,232,469.15
11.52%	2001			450,170				450,169.79	3,682,638.94
5.76%	2002				450,170			225,084.89	3,907,723.83
100.00%						225,085		0.00	3,907,723.83

<u>781,544.77</u>	<u>1,250,471.63</u>	<u>750,282.98</u>	<u>450,169.79</u>	<u>450,169.79</u>	<u>225,084.89</u>	<u>0.00</u>	<u>3,907,723.83</u>
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Bay State Gas Company & Subsidiaries  
Meiscan Analysis - Tax Book Value 9/30/97

	Plant	Reserve	Net Tax
1997	3,907,723.83	781,544.77	3,126,179.06
1998	0.00	2,032,016.39	(2,032,016.39)
1999	0.00	2,782,299.37	(2,782,299.37)
2000	0.00	3,232,469.15	(3,232,469.15)
2001	0.00	3,682,638.94	(3,682,638.94)
2002	0.00	3,907,723.83	(3,907,723.83)

Local Transportation Massachusetts  
Capital Structure

Line No.	Class of Capital (1)	Actual Capital (2)	Percent of Total Capital (3)	Cost Rate of Capital (4)	Weighted Cost of Capital (5)
1	Long Term Debt	188,500,000	42.78%	7.51%	3.21%
2	Preferred Stock	5,010,050	1.14%	5.75%	0.07%
3	Common Stock	247,081,069	56.08%	11.50%	6.45%
4	Total Capitalization	440,591,119			9.73%

Long Term Debt After Tax	1.95%
Preferred Stock	0.07%
Common Stock	6.45%
Total Capitalization	8.47%



# **Attachment RR-AG-15 (c)**

[illegible]

[illegible]

[illegible]

**Bay State Gas Company  
Utility Business Segment Massachusetts  
IRR of Lease Proposal  
Company Owned Metscan Devices 3rd Sale**

**Fleet Capital Leasing**

Months	1	65	53	1	120
Outflows	(1,119,450)				
Inflows	9,615	624,987	622,778	272,247	
Net cash flows	(1,109,835)	624,987	622,778	272,247	
IRR	<u><u>5.46%</u></u>				

**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**FASB 13 Operating lease Criteria**  
**Company Owned Metscan Devices 3rd Sale**

Bay State Gas Company  
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**Fleet Capital Leasing**

Periods (Months)	1	65	66
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**1. NPV of lease pmts:**

Fair Market Value of Asset 1,119,450

NPV of lease pmts	964,853	86.19%	
not to exceed	1,007,505	90.00%	<b>OK</b>

**2. Remaining life of asset after lease:**

Remaining asset life (years)	20	
Lease duration (years)	11.00	
Lease duration as % of asset life	55%	
Remaining life after lease (years)	9	
Remain life as % of asset life	45%	<b>OK</b>

**3. Ownership of asset being leased**

Lessee (BSG) has no equity position in the asset	<b>OK</b>
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**4. End of lease bargain purchase option**

There is no end of lease purchase option	<b>OK</b>
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Assumptions	
Lease payments	9,615
Alt Borrowing rate	6.5%
Executory expense % of lse pmt	5%
Term of lease in years	11

FASB 13 Calc'n	
FMV	1,119,450
NPV of lease pmts	964,853
NPV of lease pmt / FMV as	86.19%

Alt borrowing rate: 7 yr T @ 5.92 + 60bp= 6.52%

Month	Payment	Executory Expense	Restocking Fee	Total Payment	Present Value Factor	P.V. of Total Payment	Cash Flows
1	\$9,615.18	\$480.76	\$0.00	\$9,134.42	0.9946	\$9,085.06	\$9,134.42
2	\$9,615.18	\$480.76	0.00	9,134.42	0.9892	9,035.96	9,134.42
3	\$9,615.18	\$480.76	0.00	9,134.42	0.9839	8,987.13	9,134.42
4	\$9,615.18	\$480.76	0.00	9,134.42	0.9786	8,938.57	9,134.42
5	\$9,615.18	\$480.76	0.00	9,134.42	0.9733	8,890.26	9,134.42
6	\$9,615.18	\$480.76	0.00	9,134.42	0.9680	8,842.22	9,134.42
7	\$9,615.18	\$480.76	0.00	9,134.42	0.9628	8,794.44	9,134.42
8	\$9,615.18	\$480.76	0.00	9,134.42	0.9576	8,746.91	9,134.42
9	\$9,615.18	\$480.76	0.00	9,134.42	0.9524	8,699.64	9,134.42
10	\$9,615.18	\$480.76	0.00	9,134.42	0.9473	8,652.63	9,134.42
11	\$9,615.18	\$480.76	0.00	9,134.42	0.9421	8,605.87	9,134.42
12	\$9,615.18	\$480.76	0.00	9,134.42	0.9370	8,559.37	9,134.42
13	\$9,615.18	\$480.76	0.00	9,134.42	0.9320	8,513.11	9,134.42
14	\$9,615.18	\$480.76	0.00	9,134.42	0.9269	8,467.11	9,134.42
15	\$9,615.18	\$480.76	0.00	9,134.42	0.9219	8,421.35	9,134.42
16	\$9,615.18	\$480.76	0.00	9,134.42	0.9170	8,375.84	9,134.42
17	\$9,615.18	\$480.76	0.00	9,134.42	0.9120	8,330.58	9,134.42
18	\$9,615.18	\$480.76	0.00	9,134.42	0.9071	8,285.56	9,134.42
19	\$9,615.18	\$480.76	0.00	9,134.42	0.9022	8,240.79	9,134.42
20	\$9,615.18	\$480.76	0.00	9,134.42	0.8973	8,196.25	9,134.42
21	\$9,615.18	\$480.76	0.00	9,134.42	0.8924	8,151.96	9,134.42
22	\$9,615.18	\$480.76	0.00	9,134.42	0.8876	8,107.91	9,134.42
23	\$9,615.18	\$480.76	0.00	9,134.42	0.8828	8,064.09	9,134.42
24	\$9,615.18	\$480.76	0.00	9,134.42	0.8781	8,020.52	9,134.42
25	\$9,615.18	\$480.76	0.00	9,134.42	0.8733	7,977.17	9,134.42
26	\$9,615.18	\$480.76	0.00	9,134.42	0.8686	7,934.07	9,134.42
27	\$9,615.18	\$480.76	0.00	9,134.42	0.8639	7,891.19	9,134.42
28	\$9,615.18	\$480.76	0.00	9,134.42	0.8592	7,848.55	9,134.42
29	\$9,615.18	\$480.76	0.00	9,134.42	0.8546	7,806.13	9,134.42
30	\$9,615.18	\$480.76	0.00	9,134.42	0.8500	7,763.95	9,134.42
31	\$9,615.18	\$480.76	0.00	9,134.42	0.8454	7,721.99	9,134.42
32	\$9,615.18	\$480.76	0.00	9,134.42	0.8408	7,680.26	9,134.42
33	\$9,615.18	\$480.76	0.00	9,134.42	0.8363	7,638.76	9,134.42
34	\$9,615.18	\$480.76	0.00	9,134.42	0.8317	7,597.48	9,134.42
35	\$9,615.18	\$480.76	0.00	9,134.42	0.8272	7,556.42	9,134.42
36	\$9,615.18	\$480.76	0.00	9,134.42	0.8228	7,515.59	9,134.42
37	\$9,615.18	\$480.76	0.00	9,134.42	0.8183	7,474.97	9,134.42
38	\$9,615.18	\$480.76	0.00	9,134.42	0.8139	7,434.58	9,134.42
39	\$9,615.18	\$480.76	0.00	9,134.42	0.8095	7,394.40	9,134.42
40	\$9,615.18	\$480.76	0.00	9,134.42	0.8051	7,354.44	9,134.42
41	\$9,615.18	\$480.76	0.00	9,134.42	0.8008	7,314.70	9,134.42
42	\$9,615.18	\$480.76	0.00	9,134.42	0.7965	7,275.17	9,134.42
43	\$9,615.18	\$480.76	0.00	9,134.42	0.7922	7,235.86	9,134.42
44	\$9,615.18	\$480.76	0.00	9,134.42	0.7879	7,196.76	9,134.42
45	\$9,615.18	\$480.76	0.00	9,134.42	0.7836	7,157.86	9,134.42
46	\$9,615.18	\$480.76	0.00	9,134.42	0.7794	7,119.18	9,134.42
47	\$9,615.18	\$480.76	0.00	9,134.42	0.7752	7,080.71	9,134.42
48	\$9,615.18	\$480.76	0.00	9,134.42	0.7710	7,042.45	9,134.42
49	\$9,615.18	\$480.76	0.00	9,134.42	0.7668	7,004.39	9,134.42
50	\$9,615.18	\$480.76	0.00	9,134.42	0.7627	6,966.54	9,134.42
51	\$9,615.18	\$480.76	0.00	9,134.42	0.7585	6,928.89	9,134.42
52	\$9,615.18	\$480.76	0.00	9,134.42	0.7544	6,891.45	9,134.42
53	\$9,615.18	\$480.76	0.00	9,134.42	0.7504	6,854.21	9,134.42
54	\$9,615.18	\$480.76	0.00	9,134.42	0.7463	6,817.17	9,134.42
55	\$9,615.18	\$480.76	0.00	9,134.42	0.7423	6,780.33	9,134.42
56	\$9,615.18	\$480.76	0.00	9,134.42	0.7383	6,743.69	9,134.42
57	\$9,615.18	\$480.76	0.00	9,134.42	0.7343	6,707.24	9,134.42
58	\$9,615.18	\$480.76	0.00	9,134.42	0.7303	6,671.00	9,134.42
59	\$9,615.18	\$480.76	0.00	9,134.42	0.7264	6,634.95	9,134.42
60	\$9,615.18	\$480.76	0.00	9,134.42	0.7224	6,599.09	9,134.42





**Bay State Gas Company**  
**Utility Business Segment Massachusetts**  
**Adjusted Net Book Value Versus Net Tax Value**  
**Company Owned Metscan 3rd Sale**

Tax Life	Years Dep Book Life	Year	Cash Value	Book Reserve Balance	Net Book Value	Tax Depreciation Balance	Net Tax Value	Difference Book/Tax	Ordinary Gain
0	0	1998	1,119,450	0	1,119,450	0	1,119,450	0	0
Total			\$1,119,450	\$0	\$1,119,450	\$0	\$1,119,450	\$0	

Average age of devices	20	Monthly Term	Yearly Term	Lease Factor	Buyout Month	Buyout Year	Buyout %
Average remaining life	20	66	5.5	0.0085892	120	10.00	23.27%
25% of useful life	5	66	5.5	0.010496699	120	10.00	23.27%
Years avail to lease	15						



Local Transportation Massachusetts  
Capital Structure

Line No.	Class of Capital (1)	Actual Capital (2)	Percent of Total Capital (3)	Cost Rate of Capital (4)	Weighted Cost of Capital (5)
1	Long Term Debt	188,500,000	42.78%	7.51%	3.21%
2	Preferred Stock	5,010,050	1.14%	5.75%	0.07%
3	Common Stock	247,081,069	56.08%	11.50%	6.45%
4	Total Capitalization	440,591,119			9.73%

Long Term Debt After Tax	1.95%
Preferred Stock	0.07%
Common Stock	6.45%
Total Capitalization	8.47%

COMMONWEALTH OF MASSACHUSETTS  
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RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-AG-18: How are direct and indirect expenses allocated for hot water heaters and furnaces?

Response: Direct labor (labor directly involved in a business activity) is charged to that business activity. For instance, if an employee is engaged for six hours in the installation of a boiler sold by the Company, those hours of labor are directly charged to that business activity. Other costs that can be directly assigned, such as advertising and bad debt expense, are also directly charged to the appropriate business activity.

For costs that cannot be directly assigned, an allocation based on direct labor is used. For instance, if 13% of all direct Energy Products and Services labor is involved in boiler and furnace installations, 13% of all allocated overheads will be assigned to this function.

Energy Products and Services overhead include:

- Fleet
- Stores
- Tools & Equipment
- Office Expense
- Uniform Rental
- Call Center (Springfield)
- Non-Productive Labor
- Dispatch
- Training
- Indirect Fringe Benefits

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RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-AG-21: Provide whether Heath Consultants visited Bay State's Brockton office.  
(NOTE: in reference to Anderson note's in attachment see AG-14-19(a).

Response: Heath did not visit Bay State's Brockton office.

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RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July xx, 2005

Responsible: Danny G. Cote, General Manager

RR-AG-22: Provide the current hurdle rate for residential, small commercial and large commercial customers. (NOTE: related to ROE on revenue producing capital investments.)

Response: All current hurdle rates are included in Information Request DTE-16-17 (b).

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RECORD REQUESTS FROM THE ATTORNEY GENERAL  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-AG-23: Provide the IRR model the company uses. (NOTE: think we already provided, provide reference.)

Response: The IRR model used by the Company is presented in Information Request DTE-16-17 (a).

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D.T.E. 05-27

Date: July 12, 2005

Responsible: James Harrison, Consultant

RR-AG-27: Explanation of the modifications to the cost of service model supplied in response to AG-7-16 that need to be made to generate the response in AG-22-9.

Response: The adjustments needed to be made to the cost of service study to show claimed revenues are noted in Response AG-22-9. The proprietary Excel spreadsheet model that was used to generate the revenues at the claimed rate of return is in response AG-7-16 and is noted as the Excel file AG-7-16 part 1 of 2.xls.

The first step is to create a separate working directory on the hard disk; then copy the main cost of service file you will be using into this directory. This directory should be one that is created specifically to run the cost of service model because the cost of service model will be generating a large number of component files. Open the model by double clicking on the filename using Windows Explorer. Enable the macros and then choose the button that says "Don't Update" for the worksheet links. At this point, we will make the changes that are noted in Response AG-22-9.

After the changes are made, go to Row 916 in the Cost of Service tab which is noted as Operating Income. Hit the F9 key a few times to recalculate the worksheet and notice if there are any error messages. If not, the worksheet has recalculated the total Company cost of service, and you are ready to compute the component costs. You must set the default directory to the current directory before you compute the component costs. Go to the Tools menu at the top of the worksheet, and go to the Options submenu. Click on the General tab and at the bottom, where it says "Default File Location" change that to the current file location of the cost of service model, and click OK. You are now ready to run the component cost models.

Go to the top and under the COSS menu, go to the submenu called "Functions and Components" and select its submenu. You will then get a notice about the default directory. Since we have already changed it, click OK, and then the Functions and Component Cost menu box will appear. In the Function and Component Cost menu, click the box "All Components" and then click "OK." The component cost will now calculate. This may take 10 minutes or more depending on the speed of



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RR-AG-27, Continued

your computer. The program is developing component cost of service studies and saving them on the hard drive in the default directory that you previously defined. After the program is done calculating component costs, a blank worksheet will appear. Now retrieve the cost of service study file with which you originally started. Again, enable the macros and don't update the links. The next step is to update the links to the cost of service model and to check that they are calculating the correct revenue requirements. Go to the Unbundled tab, and go to line 2301. Go to the Edit command above and then click on the "Links" selection. For every FCW file listed, highlight it and click on "Change Source," and then highlight the filename that corresponds to the source filename in that box, and click OK. Do this for each of the FCW files listed. After that is completed, highlight each individual file and hit the Update Values key for each. After you have completed updating each one of the links, hit the Close button. Now recalculate the worksheet by hitting the F9 key two or three times. The values in Cells C2301 and C2302 in the Unbundled tab should now be the same values.

The next step is to copy the function components to the Function sheet. Go to the Function menu at the top of the spreadsheet. Go to the "Copy Total Company Components to the Functions Sheet" and its submenu and the program will now start copying the costs to the Function tab. When it copies each file, a box will come up asking if you want to update the links. Click "Don't Update" until it copies all the files to the Function tab. Once it's completed, the file has been updated with all the component costs. Now you can save the file under the default name or any other name in the default directory. Log the names of all directories and files created in this process so that they can be deleted at the conclusion of this rate case in accordance with the agreement by which these confidential materials were obtained.

MAC is also willing to go through each of these steps simultaneously with the AG over the telephone to ensure that all the proper steps are taken to recalculate the model with the requested changes. Please contact Michael Morganti (610) 670-9199.

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Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-DTE-3: The information response that provides the service quality audit.

Response: Please see the Company's response to AG-01-08.

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RESPONSE OF BAY STATE GAS COMPANY TO  
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D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-DTE-4: Looking at the 2004 SQI report, what are the reasons for the customer satisfaction decline from 1997 to 2001.

Response: The Company does not have specific information that would allow it to determine, with certainty, what the cause or causes were for the decline in customer satisfaction.

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D.T.E. 05-27

Date: July 12, 2005

Responsible: Stephen H. Bryant, President

RR-DTE-6: What was the cost of the New Hampshire for making the first year's filing of information for the steel infrastructure?

Response: The Company is reasonably certain that no administrative costs, including such costs as legal expenses, were included in the filings made in New Hampshire relative to its steel infrastructure replacement program.

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RESPONSE OF BAY STATE GAS COMPANY TO  
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D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-8: Please provide if any utilities are providing ratepayers dollars to GTI?  
(NOTE: Want to know if any other utilities are funneling the GTI payments through their rates.)

Response: The following gas local distribution companies and the indicated subsidiaries are providing ratepayer dollars to GTI through public utility commission approved rates:

Atmos Energy - IL  
Mississippi Valley Gas (Atmos) - MS  
Western Kentucky Gas (Atmos) - KY  
Atmos Energy - VA  
Avista - ID  
Avista - WA  
Consolidated Edison - NY  
Energy East (New York State Electric & Gas) – NY  
Energy East (Rochester Gas & Electric) - NY  
Alabama Gas (Energen) - AL  
Intermountain Gas - ID  
KeySpan Energy - NY  
National Fuel Gas Distribution - NY  
National Fuel Gas Distribution - PA  
Niagara Mohawk - NY  
Northern Utilities (NiSource) - NH  
Columbia Gas of KY (NiSource) - KY  
North Carolina Natural Gas - NC  
Northwest Natural - OR  
Public Service Electric & Gas - NJ  
TECO Peoples Gas - FL  
Questar Gas - UT  
Questar Gas - WY

Additionally, there are about two dozen municipal gas companies that do not require PUC approval that are collecting an R&D surcharge from their customers, and three intrastate companies.

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D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-9: What were the actual GTI payments by the company in 2004?  
Breakdown by BSG and NH NU through August 2004? Please provide a  
copy of the settlement agreement by the NH PUC allowing for payment.

Response: Annual funding levels for Bay State Gas as part of the GRI - East Coast  
Distributor's (ECD) Settlement Agreement for 2004 were \$218,652. A  
complete list of Bay State Gas ECD funding can be found in the table  
below. Bay State Gas and Northern Utilities, Inc. joined the East Coast  
Distributor's as one combined entity; therefore a breakdown of ECD funds  
by NiSource subsidiaries is not available.

Bay State Gas - ECD R&D Funding Levels

1999	\$469,992
2000	\$331,039
2001	\$233,958
2002	\$209,906
2003	\$209,906
2004	\$218,652

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RESPONSE OF BAY STATE GAS COMPANY TO  
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D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-10: In the attachment to AG 2-1, revise chart to provide data going back to 1985.

Response: Although the Company is supplementing data to the original chart in response to AG 2-1 submitted on June 6, 2005, it's important to note that the company has rescinded its original response and chart. Although the original response contains accurate data, the methodology and calculations used to derive the leak rate can lead to erroneous conclusions. The original Information Request AG 2-1 asked the Company to provide, for each of the years from 1990 to 2005, the following:

- a) the rate of corrosion leaks per mile for bare steel for the Company;
- b) the rate of corrosion leaks per mile for bare steel for the each of the Company's separate service areas;
- c) the rate of corrosion leaks per mile for coated steel without cathodic protection for the Company;
- d) the rate of corrosion leaks per mile for coated steel without cathodic protection each of the Company's separate service areas; and,
- e) plot the corrosion leaks on system maps for each of the Company's separate service areas.
- f) provide all work papers, calculations and assumptions for (a)-(d).

In the Company's initial response to Information Request AG-2-1, the Company explained that its Work Order Management System (WOMS) does not directly capture whether the corrosion repair occurs on protected or unprotected pipe. Nonetheless, in an effort to respond to the items (a) through (d), the Company provided Attachment AG-2-1. In its initial response, the Company also explained the methodology it used to derive the leaks rates shown in the column entitled "Cor Leaks per Mile of BS and Cor Leaks per 1000 BS Services.

Regarding Bay State's response to items (a) and (b) of AG 2-1, the corrosion leak rates in column K were derived strictly from figures from the DOT F7100.1-1 Annual Reports for Distribution System and worksheets. The rate was determined by dividing the number of leaks on

mains due to corrosion by the total miles of unprotected bare steel (UBS) mains and by dividing the number of leaks on services due to corrosion by the total number of UBS services. Data for each division of Bay State and for the Company on a consolidated basis were separately provided.

Regarding Bay State's response to items (c) & (d) of AG 2-1, the corrosion leak rates in column L were derived strictly from figures from the DOT F7100.1-1 Annual Reports for Distribution System and worksheets. The rate was determined by dividing the number of leaks on mains due to corrosion by the total miles of unprotected coated steel (UCS) mains and by dividing the number of leaks on services due to corrosion by the total number of UCS services. Data for each division of Bay State and for the Company on a consolidated basis were separately provided.

As noted above, the Company's Steel Infrastructure Replacement (SIR) program addresses all unprotected steel. Please see column M (Cor Leaks per Mile of unprotected steel (US) and Cor Leaks per 1000 US Services) of Attachment AG-2-1 for the rate of corrosion leaks per mile of unprotected steel main and per 1000 unprotected steel services between 1990 and 2004. The corrosion leak rates in column M were derived strictly from figures from the DOT F7100.1-1 Annual Reports for Distribution System and worksheets. The rate was determined by dividing the number of leaks on mains due to corrosion by the total miles of US mains and by dividing the number of leaks on services due to corrosion by the total number of US services. Data for each division of Bay State and for the Company on a consolidated basis were separately provided.

Although the Company calculated these leak rates in an attempt to provide data which is not easily obtainable from its WOMS, the calculation takes two independent known variables, for example, miles of unprotected coated steel and total corrosion leaks repaired and divides the two numbers. Doing so could lead one to erroneously conclude the leak rate on unprotected coated steel pipe is far greater than the leak rate on bare steel pipe. The Company believes that column M more accurately reflects the Company's leak rates due to corrosion.

In response to the Attorney General's request for supplemental information to Information Request AG-2-1, the Company manually reviewed WOMS reports and manually researched work orders for all the corrosion main leaks eliminated or repaired during calendar year 2004 by division. Attachment AG-2-1 Supplemental contains both graphical and tabular information which shows that the vast majority (approximately 90%) of corrosion main leaks repaired or eliminated are done on bare or unprotected coated steel pipe. The study of just one year's data took approximately 50 man-hours to complete. Data from 1994 through 2003 is available, however, it would likely take another 500 man-hours to research based upon the time expended to obtain 2004 data.



This being said, the Company in Attachment RR-DTE-10 has supplemented Attachment AG-2-1 to include 1985-1989 data. However, the Company provides this with the caveat that the calculations used to derive the leak rate can lead to erroneous conclusions that cannot be validated without extensive manual research of the records.

**Bay State Gas Company  
Historical Mains and Services Data  
Brockton Division**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	<b>Mains</b>														
Line No.	Year	Unprotected Bare Steel	Unprotected Coated Steel	Cathodically Protected Bare Steel	Cathodically Protected Coated Steel	Plastic	Cast & Wrought Iron	Copper Main	Total Miles of Main	All Leaks per all Miles of Main	Cor Leaks Per Mile of BS	Cor Leaks Per Mile of UCS	Cor Leaks Per Mile of US	Total Main Leaks	Cor
1	1985	480	331	0	980	26	296	NA	2113	0.18	0.45	0.66	0.27	383	218
2	1986	470	328	0	990	61	296	NA	2145	0.20	0.54	0.77	0.32	432	254
3	1987	463	327	0	995	101	295	NA	2181	0.13	0.35	0.50	0.21	286	163
4	1988	453	324	0	1008	145	294	NA	2224	0.17	0.42	0.59	0.25	389	192
5	1989	447	303	0	1038	191	293	NA	2272	0.20	0.67	0.99	0.40	455	301
6	1990	437	277	0	1066	221	292	NA	2293	0.10	0.54	0.85	0.33	236	236
7	1991	429	236	0	1107	259	289	NA	2320	0.15	0.82	1.49	0.53	352	352
8	1992	419	201	0	1145	301	287	NA	2353	0.11	0.64	1.34	0.44	270	270
9	1993	412	154	0	1193	341	283	NA	2383	0.17	0.98	2.62	0.71	404	404
10	1994	404	130	0	1220	385	281	NA	2420	0.23	1.39	4.32	1.05	561	561
11	1995	389	86	0	1267	424	279	NA	2445	0.18	1.16	5.26	0.95	452	452
12	1996	378	70	0	1287	462	273	NA	2470	0.18	1.16	6.24	0.98	437	437
13	1997	370	73	0	1288	500	271	NA	2502	0.16	1.06	5.38	0.89	393	393
14	1998	357	80	0	1285	540	265	NA	2527	0.18	1.31	5.83	1.07	466	466
15	1999	346	79	0	1290	572	261	NA	2548	0.19	1.38	6.03	1.12	476	476
16	2000	338	76	0	1293	604	259	NA	2570	0.25	1.88	8.36	1.53	635	635
17	2001	331	74	0	1294	636	256	NA	2591	0.22	1.76	7.85	1.43	581	581
18	2002	327	72	0	1294	653	254	NA	2600	0.18	1.40	6.38	1.15	459	459
19	2003	320	70	0	1296	674	254	NA	2614	0.23	1.88	8.59	1.54	601	601
20	2004	305	63	0	1306	722	256	NA	2652	0.19	1.67	8.08	1.38	509	509
	<b>Services</b>														
	Year	Unprotected Bare Steel Svcs	Unprotected Coated Steel Svcs	Cathodically Protected B.S. Svcs	Cathodically Protected C.S. Svcs	Plastic Svcs	CI & WI Svcs	Cu Svcs	Total Number of Svcs	All Leaks per 1000 Svcs	Cor Leaks per 1000 BS Svcs	Cor Leaks per 1000 UCS Svcs	Cor Leaks per 1000 US Svcs	Total Svc Leaks	Cor svc
21	1985	31170	9577	0	32457	10638	20	0	83862	5.53	6.29	20.47	4.81	464	196
22	1986	30528	9474	0	32390	13700	20	0	86112	3.62	3.01	9.71	2.30	312	92
23	1987	29905	9368	0	32306	17388	20	0	88987	5.15	4.88	15.58	3.72	458	146
24	1988	28803	9211	0	32119	21172	20	0	91325	3.39	3.44	10.75	2.60	310	99
25	1989	28001	9122	0	32020	24110	20	0	93273	5.27	6.18	18.97	4.66	492	173
26	1990	27072	8982	0	31882	27452	20	0	95408	1.41	4.99	15.03	3.74	135	135
27	1991	25936	8843	0	31780	30703	20	0	97282	2.51	9.41	27.59	7.02	244	244
28	1992	24859	8668	0	31612	34848	20	0	100007	1.82	7.32	21.00	5.43	182	182
29	1993	24544	8596	0	31566	38148	0	0	102854	2.73	11.45	32.69	8.48	281	281
30	1994	24053	8489	0	31441	41283	0	0	105266	2.64	11.56	32.75	8.54	278	278
31	1995	23542	8381	0	31305	44099	0	0	107327	1.73	7.90	22.19	5.83	186	186
32	1996	22963	8251	0	31128	48003	0	0	110345	1.88	9.06	25.21	6.66	208	208
33	1997	22332	8063	0	30810	51225	0	0	112430	1.64	8.24	22.82	6.05	184	184
34	1998	21677	7873	0	30531	55081	0	0	115162	2.75	14.62	40.26	10.73	317	317
35	1999	21103	7454	0	30321	57785	0	0	116663	2.13	11.80	33.40	8.72	249	249
36	2000	20566	7099	0	30181	60620	0	0	118466	1.98	11.43	33.10	8.49	235	235
37	2001	20208	6518	0	30181	62542	0	0	119449	1.82	10.74	33.29	8.12	217	217
38	2002	19564	6501	0	30181	64609	0	0	120855	1.24	7.67	23.07	5.75	150	150
39	2003	19099	6077	0	30181	66797	0	0	122154	2.02	12.93	40.65	9.81	247	247
40	2004	18631	5509	0	30181	68983	0	0	123304	1.43	9.45	31.95	7.29	176	176

Bay State Gas Company  
Historical Mains and Services Data  
Springfield Division

Line No.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Mains														
	Year	Unprotected Bare Steel	Unprotected Coated Steel	Cathodically Protected Bare Steel	Cathodically Protected Coated Steel	Plastic	Cast & Wrought Iron	Copper Main	Total Miles of Main	All Leaks per all Miles of Main	Cor Leaks Per Mile of BS	Cor Leaks Per Mile of UCS	Cor Leaks Per Mile of US	Total Main Leaks	Cor
1	1985	156	229	0	369	16	480	NA	1250	0.41	0.51	0.35	0.21	510	80
2	1986	153	229	0	369	31	478	NA	1260	0.40	0.61	0.41	0.25	510	94
3	1987	152	229	0	368	55	477	NA	1281	0.47	0.52	0.34	0.21	597	79
4	1988	149	229	0	368	86	475	NA	1307	0.36	0.40	0.26	0.16	467	60
5	1989	147	229	0	368	104	473	NA	1321	0.20	0.44	0.28	0.17	267	64
6	1990	145	229	0	368	126	471	NA	1339	0.40	0.61	0.38	0.24	541	88
7	1991	142	229	0	368	151	465	NA	1355	0.24	0.41	0.25	0.16	330	58
8	1992	139	229	0	368	179	461	NA	1376	0.16	0.31	0.19	0.12	215	43
9	1993	137	228	0	369	202	453	NA	1389	0.25	0.42	0.25	0.16	343	58
10	1994	132	228	0	370	234	443	NA	1407	0.34	0.59	0.34	0.22	483	78
11	1995	129	228	0	369	250	440	NA	1416	0.35	0.74	0.42	0.27	489	95
12	1996	127	102	0	497	266	435	NA	1427	0.30	0.67	0.83	0.37	421	85
13	1997	123	83	0	515	285	428	NA	1434	0.24	0.40	0.59	0.24	337	49
14	1998	120	54	0	546	306	424	NA	1450	0.23	0.54	1.20	0.37	328	65
15	1999	120	53	0	546	325	422	NA	1466	0.32	0.82	1.85	0.57	468	98
16	2000	119	53	0	546	340	418	NA	1476	0.29	0.71	1.58	0.49	433	84
17	2001	118	53	0	546	353	416	NA	1486	0.26	0.43	0.96	0.30	380	51
18	2002	118	37	0	563	359	412	NA	1489	0.30	0.39	1.24	0.30	446	46
19	2003	114	36	0	565	368	410	NA	1493	0.28	0.68	2.14	0.51	424	77
20	2004	100	40	0	565	386	396	NA	1487	0.35	0.75	1.88	0.54	521	75
Services															
	Year	Unprotected Bare Steel Svcs	Unprotected Coated Steel Svcs	Cathodically Protected B.S. Svcs	Cathodically Protected C.S. Svcs	Plastic Svcs	CI & WI Svcs	Cu Svcs	Total Number of Svcs	All Leaks per 1000 Svcs	Cor Leaks per 1000 BS Svcs	Cor Leaks per 1000 UCS Svcs	Cor Leaks per 1000 US Svcs	Total Svc Leaks	Cor svc
21	1985	48139	3014	0	15566	3276	0	0	69995	7.11	8.12	129.73	7.64	498	391
22	1986	47657	3014	0	15555	4817	0	0	71043	6.08	7.39	116.79	6.95	432	352
23	1987	47057	3014	0	15503	6808	0	0	72382	7.10	8.39	131.06	7.89	514	395
24	1988	46449	3014	0	15375	8895	0	0	73733	5.37	6.39	98.54	6.00	396	297
25	1989	45702	3014	0	15150	10661	0	0	74527	5.97	7.20	109.16	6.75	445	329
26	1990	44705	3014	0	14944	12122	0	0	74785	5.91	7.69	114.13	7.21	442	344
27	1991	43885	3014	0	14837	13490	0	0	75226	6.75	7.52	109.49	7.04	508	330
28	1992	43308	2941	0	14816	15404	0	0	76469	4.07	4.78	70.38	4.48	311	207
29	1993	42647	2826	0	14817	17486	0	0	77776	6.15	7.34	110.76	6.88	478	313
30	1994	39183	2756	0	17337	19546	0	0	78822	6.60	9.47	134.62	8.85	520	371
31	1995	38422	2651	0	17281	21486	0	0	79840	7.26	10.96	158.81	10.25	580	421
32	1996	37798	2448	0	17254	23372	0	0	80872	6.83	10.93	168.71	10.26	552	413
33	1997	36680	2238	0	17232	25024	0	0	81174	5.54	8.64	141.64	8.15	450	317
34	1998	35744	2138	0	17146	26679	0	0	81707	7.01	12.28	205.33	11.59	573	439
35	1999	35525	2088	0	17151	28425	0	0	83189	7.68	13.26	225.57	12.52	639	471
36	2000	35355	2059	0	17128	30187	0	0	84729	6.62	11.96	205.44	11.31	561	423
37	2001	35182	2009	0	17115	31550	0	0	85856	6.44	12.62	221.01	11.94	553	444
38	2002	34465	1936	0	17076	32958	0	0	86435	6.80	12.62	224.69	11.95	588	435
39	2003	33785	1871	0	17030	34148	0	0	86834	7.14	14.92	269.37	14.14	620	504
40	2004	33020	1632	0	17093	35532	0	0	87277	6.71	14.35	290.44	13.68	586	474

Project ID		Key Data for the Project											
		Phase 1 Data				Phase 2 Data				Phase 3 Data			
		Task ID	Task Name	Duration (Days)	Cost (\$)	Task ID	Task Name	Duration (Days)	Cost (\$)	Task ID	Task Name	Duration (Days)	Cost (\$)
P001	Project Alpha	T001	Task A1	5	1000	T002	Task A2	3	600	T003	Task A3	7	1400
		T004	Task B1	4	800	T005	Task B2	6	1200	T006	Task B3	5	1000
		T007	Task C1	3	600	T008	Task C2	4	800	T009	Task C3	6	1200
		T010	Task D1	2	400	T011	Task D2	5	1000	T012	Task D3	4	800
		T013	Task E1	6	1200	T014	Task E2	3	600	T015	Task E3	5	1000
		T016	Task F1	4	800	T017	Task F2	7	1400	T018	Task F3	3	600
		T019	Task G1	5	1000	T020	Task G2	4	800	T021	Task G3	6	1200
		T022	Task H1	3	600	T023	Task H2	5	1000	T024	Task H3	4	800
		T025	Task I1	7	1400	T026	Task I2	3	600	T027	Task I3	5	1000
		T028	Task J1	4	800	T029	Task J2	6	1200	T030	Task J3	3	600
P002	Project Beta	T031	Task A1	6	1200	T032	Task A2	4	800	T033	Task A3	5	1000
		T034	Task B1	5	1000	T035	Task B2	3	600	T036	Task B3	7	1400
		T037	Task C1	4	800	T038	Task C2	6	1200	T039	Task C3	3	600
		T040	Task D1	3	600	T041	Task D2	5	1000	T042	Task D3	4	800
		T043	Task E1	7	1400	T044	Task E2	3	600	T045	Task E3	6	1200
		T046	Task F1	5	1000	T047	Task F2	4	800	T048	Task F3	7	1400
		T049	Task G1	6	1200	T050	Task G2	3	600	T051	Task G3	5	1000
		T052	Task H1	4	800	T053	Task H2	6	1200	T054	Task H3	3	600
		T055	Task I1	3	600	T056	Task I2	5	1000	T057	Task I3	4	800
		T058	Task J1	7	1400	T059	Task J2	3	600	T060	Task J3	6	1200
P003	Project Gamma	T061	Task A1	4	800	T062	Task A2	6	1200	T063	Task A3	5	1000
		T064	Task B1	3	600	T065	Task B2	4	800	T066	Task B3	7	1400
		T067	Task C1	5	1000	T068	Task C2	3	600	T069	Task C3	6	1200
		T070	Task D1	6	1200	T071	Task D2	5	1000	T072	Task D3	4	800
		T073	Task E1	3	600	T074	Task E2	7	1400	T075	Task E3	3	600
		T076	Task F1	4	800	T077	Task F2	5	1000	T078	Task F3	6	1200
		T079	Task G1	7	1400	T080	Task G2	3	600	T081	Task G3	5	1000
		T082	Task H1	5	1000	T083	Task H2	4	800	T084	Task H3	7	1400
		T085	Task I1	6	1200	T086	Task I2	3	600	T087	Task I3	5	1000
		T088	Task J1	4	800	T089	Task J2	6	1200	T090	Task J3	3	600
P004	Project Delta	T091	Task A1	5	1000	T092	Task A2	4	800	T093	Task A3	6	1200
		T094	Task B1	3	600	T095	Task B2	5	1000	T096	Task B3	4	800
		T097	Task C1	6	1200	T098	Task C2	3	600	T099	Task C3	7	1400
		T100	Task D1	4	800	T101	Task D2	6	1200	T102	Task D3	5	1000
		T103	Task E1	7	1400	T104	Task E2	3	600	T105	Task E3	4	800
		T106	Task F1	5	1000	T107	Task F2	4	800	T108	Task F3	6	1200
		T109	Task G1	3	600	T110	Task G2	7	1400	T111	Task G3	5	1000
		T112	Task H1	6	1200	T113	Task H2	3	600	T114	Task H3	4	800
		T115	Task I1	4	800	T116	Task I2	5	1000	T117	Task I3	7	1400
		T118	Task J1	3	600	T119	Task J2	6	1200	T120	Task J3	5	1000
P005	Project Epsilon	T121	Task A1	6	1200	T122	Task A2	5	1000	T123	Task A3	4	800
		T124	Task B1	4	800	T125	Task B2	7	1400	T126	Task B3	3	600
		T127	Task C1	5	1000	T128	Task C2	3	600	T129	Task C3	6	1200
		T130	Task D1	3	600	T131	Task D2	6	1200	T132	Task D3	5	1000
		T133	Task E1	7	1400	T134	Task E2	4	800	T135	Task E3	3	600
		T136	Task F1	6	1200	T137	Task F2	3	600	T138	Task F3	7	1400
		T139	Task G1	4	800	T140	Task G2	5	1000	T141	Task G3	4	800
		T142	Task H1	3	600	T143	Task H2	7	1400	T144	Task H3	6	1200
		T145	Task I1	5	1000	T146	Task I2	4	800	T147	Task I3	3	600
		T148	Task J1	6	1200	T149	Task J2	3	600	T150	Task J3	5	1000
P006	Project Zeta	T151	Task A1	4	800	T152	Task A2	6	1200	T153	Task A3	5	1000
		T154	Task B1	3	600	T155	Task B2	4	800	T156	Task B3	7	1400
		T157	Task C1	5	1000	T158	Task C2	3	600	T159	Task C3	6	1200
		T160	Task D1	6	1200	T161	Task D2	5	1000	T162	Task D3	4	800
		T163	Task E1	3	600	T164	Task E2	7	1400	T165	Task E3	3	600
		T166	Task F1	4	800	T167	Task F2	5	1000	T168	Task F3	6	1200
		T169	Task G1	7	1400	T170	Task G2	3	600	T171	Task G3	5	1000
		T172	Task H1	5	1000	T173	Task H2	4	800	T174	Task H3	7	1400
		T175	Task I1	6	1200	T176	Task I2	3	600	T177	Task I3	4	800
		T178	Task J1	3	600	T179	Task J2	6	1200	T180	Task J3	5	1000
P007	Project Eta	T181	Task A1	5	1000	T182	Task A2	4	800	T183	Task A3	6	1200
		T184	Task B1	3	600	T185	Task B2	5	1000	T186	Task B3	4	800
		T187	Task C1	6	1200	T188	Task C2	3	600	T189	Task C3	7	1400
		T190	Task D1	4	800	T191	Task D2	6	1200	T192	Task D3	5	1000
		T193	Task E1	7	1400	T194	Task E2	3	600	T195	Task E3	4	800
		T196	Task F1	5	1000	T197	Task F2	4	800	T198	Task F3	6	1200
		T199	Task G1	3	600	T200	Task G2	7	1400	T201	Task G3	5	1000
		T202	Task H1	6	1200	T203	Task H2	3	600	T204	Task H3	4	800
		T205	Task I1	4	800	T206	Task I2	5	1000	T207	Task I3	7	1400
		T208	Task J1	3	600	T209	Task J2	6	1200	T210	Task J3	5	1000
P008	Project Theta	T211	Task A1	6	1200	T212	Task A2	5	1000	T213	Task A3	4	800
		T214	Task B1	4	800	T215	Task B2	7	1400	T216	Task B3	3	600
		T217	Task C1	5	1000	T218	Task C2	3	600	T219	Task C3	6	1200
		T220	Task D1	3	600	T221	Task D2	6	1200	T222	Task D3	5	1000
		T223	Task E1	7	1400	T224	Task E2	4	800	T225	Task E3	3	600
		T226	Task F1	6	1200	T227	Task F2	3	600	T228	Task F3	7	1400
		T229	Task G1	4	800	T230	Task G2	5	1000	T231	Task G3	4	800
		T232	Task H1	3	600	T233	Task H2	7	1400	T234	Task H3	6	1200
		T235	Task I1	5	1000	T236	Task I2	4	800	T237	Task I3	3	600
		T238	Task J1	6	1200	T239	Task J2	3	600	T240	Task J3	5	1000
P009	Project Iota	T241	Task A1	5	1000	T242	Task A2	4	800	T243	Task A3	6	1200
		T244	Task B1	3	600	T245	Task B2	5	1000	T246	Task B3	4	800
		T247	Task C1	6	1200	T248	Task C2	3	600	T249	Task C3	7	1400
		T250	Task D1	4	800	T251	Task D2	6	1200	T252	Task D3	5	1000
		T253	Task E1	7	1400	T254	Task E2	3	600	T255	Task E3	4	800
		T256	Task F1	5	1000	T257	Task F2	4	800	T258	Task F3	6	1200
		T259	Task G1	3	600	T260	Task G2	7	1400	T261	Task G3	5	1000
		T262	Task H1	6	1200	T263	Task H2	3	600	T264	Task H3	4	800
		T265	Task I1	4	800	T266	Task I2	5	1000	T267	Task I3	7	1400
		T268	Task J1	3	600	T269	Task J2	6	1200	T270	Task J3	5	1000
P010	Project Kappa	T271	Task A1	6	1200	T272	Task A2	5	1000	T273	Task A3	4	800
		T274	Task B1	4	800	T275	Task B2	7	1400	T276	Task B3	3	600
		T277	Task C1	5	1000	T278	Task C2	3	600	T279	Task C3	6	1200
		T280	Task D1	3	600	T281	Task D2	6	1200	T282	Task D3	5	1000
		T283	Task E1	7	1400	T284	Task E2	4	800	T285	Task E3	3	600
		T286	Task F1	6	1200	T287	Task F2	3	600	T288	Task F3	7	1400
		T289	Task G1	4	800	T290	Task G2	5	1000	T291	Task G3	4	800
		T292	Task H1	3	600	T293	Task H2	7	1400	T294	Task H3	6	1200
		T295	Task I1	5	1000	T296	Task I2	4	800	T297	Task I3	3	600
		T298	Task J1	6	1200	T299	Task J2	3	600	T300	Task J3	5	1000
P011	Project Lambda	T301	Task A1	5	1000	T302	Task A2	4	800	T303	Task A3	6	1200
		T304	Task B1	3	600	T305	Task B2	5	1000	T306	Task B3	4	800
		T307	Task C1	6	1200	T308	Task C2	3	600	T309	Task C3	7	1400
		T310	Task D1	4	800	T311	Task D2	6	1200	T312	Task D3	5	1000
		T313	Task E1	7	1400	T314	Task E2	3	600	T315	Task E3	4	800
		T316	Task F1	5	1000	T317	Task F2	4	800	T318	Task F3	6	1200
		T319	Task G1	3	600	T320	Task G2	7	1400	T321	Task G3	5	1000
		T322	Task H1	6	1200	T323	Task H2	3	600	T324	Task H3	4	800
		T325	Task I1	4	800	T326	Task I2	5	1000	T327	Task I3	7	1400
		T328	Task J1	3	600	T329	Task J2	6	1200	T330	Task J3	5	1000
P012	Project Mu	T331	Task A1	6	1200	T332	Task A2	5	1000	T333	Task A3	4	800
		T334	Task B1	4	800	T335	Task B2	7	1400	T336	Task B3	3	600
		T337	Task C1	5	1000	T338	Task C2	3	600	T339	Task C3	6	1200
		T340	Task D1	3	600	T341	Task D2	6	1200	T342	Task D3	5	1000
		T343	Task E1	7	1400	T344	Task E2	4	800	T345	Task E3	3	600
		T346	Task F1	6	1200	T347	Task F2	3	600	T348	Task F3	7	1400
		T349	Task G1	4	800	T350	Task G2	5	1000	T351	Task G3	4	800
		T352	Task H1	3	600	T353	Task H2	7	1400	T354	Task H3	6	1200
		T355	Task I1	5	1000	T356	Task I2	4	800	T357	Task I3	3	600
		T358	Task J1	6	1200	T359	Task J2	3	600	T360	Task J3	5	1000
P013	Project Nu	T361	Task A1	5	1000	T362	Task A2	4	800	T363	Task A3	6	1200
		T364	Task B1	3	600	T365	Task B2	5	1000	T366	Task B3	4	800
		T367	Task C1	6	1200	T368	Task C2	3	600	T369	Task C3	7	1400
		T370	Task D1	4	800	T371	Task D2	6	1200	T372	Task D3	5	1000
		T373	Task E1	7	1400	T374							

**Bay State Gas Company  
Historical Mains and Services Data  
Consolidated**

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Line No.	<b>Mains</b>														
	<b>Year</b>	<b>Unprotected Bare Steel</b>	<b>Unprotected Coated Steel</b>	<b>Cathodically Protected Bare Steel</b>	<b>Cathodically Protected Coated Steel</b>	<b>Plastic</b>	<b>Cast &amp; Wrought Iron</b>	<b>Copper Main</b>	<b>Total Miles of Main</b>	<b>All Leaks per all Miles of Main</b>	<b>Cor Leaks Per Mile of BS</b>	<b>Cor Leaks Per Mile of UCS</b>	<b>Cor Leaks Per Mile of US</b>	<b>Total Main Leaks</b>	<b>Cor</b>
1	1985	636	654	0	1488	64	1005	NA	3847	0.29	0.53	0.52	0.26	1132	339
2	1986	623	649	0	1500	120	1003	NA	3895	0.27	0.57	0.55	0.28	1034	358
3	1987	615	639	0	1509	144	1000	NA	3907	0.25	0.41	0.39	0.20	989	250
4	1988	721	562	0	1477	277	997	NA	4034	0.25	0.36	0.46	0.20	991	258
5	1989	700	536	0	1524	345	992	NA	4097	0.21	0.55	0.72	0.31	842	386
6	1990	688	511	0	1558	402	988	NA	4147	0.29	0.53	0.71	0.30	1204	364
7	1991	677	468	0	1600	467	979	NA	4191	0.25	0.65	0.94	0.38	1039	440
8	1992	648	440	0	1650	542	976	NA	4256	0.20	0.52	0.76	0.31	834	334
9	1993	638	390	0	1722	613	958	NA	4321	0.26	0.76	1.24	0.47	1127	482
10	1994	624	362	0	1738	696	943	NA	4363	0.40	1.11	1.91	0.70	1761	693
11	1995	607	319	0	1781	758	936	NA	4401	0.32	0.96	1.82	0.63	1419	580
12	1996	593	182	0	1925	821	921	NA	4442	0.29	0.96	3.13	0.74	1269	570
13	1997	580	161	0	1950	886	910	NA	4487	0.26	0.84	3.01	0.65	1152	485
14	1998	562	143	0	1976	952	897	NA	4530	0.32	1.09	4.27	0.87	1429	611
15	1999	551	139	0	1985	1012	889	NA	4576	0.33	1.18	4.68	0.94	1506	651
16	2000	543	133	0	1994	1063	882	NA	4615	0.36	1.48	6.05	1.19	1656	804
17	2001	534	131	0	1995	1110	874	NA	4644	0.31	1.28	5.24	1.03	1436	686
18	2002	527	112	0	2012	1140	869	NA	4660	0.31	1.16	5.47	0.96	1442	613
19	2003	506	109	0	2024	1177	867	NA	4683	0.36	1.52	7.07	1.25	1676	771
20	2004	477	106	0	2034	1255	846	NA	4718	0.38	1.41	6.36	1.16	1803	674
	<b>Services</b>														
	<b>Year</b>	<b>Unprotected Bare Steel Svcs</b>	<b>Unprotected Coated Steel Svcs</b>	<b>Cathodically Protected B.S. Svcs</b>	<b>Cathodically Protected C.S. Svcs</b>	<b>Plastic Svcs</b>	<b>CI &amp; WI Svcs</b>	<b>Cu Svcs</b>	<b>Total Number of Svcs</b>	<b>All Leaks per 1000 Svcs</b>	<b>Cor Leaks per 1000 BS Svcs</b>	<b>Cor Leaks per 1000 UCS Svcs</b>	<b>Cor Leaks per 1000 US Svcs</b>	<b>Total Svc Leaks</b>	<b>Cor svc</b>
21	1985	89309	16603	0	56157	18049	20	645	180783	5.85	6.80	36.56	5.73	1058	607
22	1986	88132	16297	0	56282	23343	20	645	184719	4.86	6.10	33.01	5.15	897	538
23	1987	86893	15996	0	56267	29676	19	643	189494	5.91	7.25	39.38	6.12	1120	630
24	1988	89149	14233	0	53268	36120	20	642	193432	4.39	4.95	30.98	4.27	849	441
25	1989	87439	13664	0	53084	41477	15	642	196321	5.52	6.83	43.69	5.90	1084	597
26	1990	85334	13188	0	53296	46841	20	639	199318	4.52	6.89	44.59	5.97	901	588
27	1991	83073	12868	0	53267	51982	20	639	201849	6.07	8.73	56.34	7.56	1225	725
28	1992	81194	12307	0	53392	58721	20	639	206273	4.75	5.48	36.16	4.76	980	445
29	1993	80024	12119	0	53350	64742	0	635	210870	6.07	7.59	50.09	6.59	1280	607
30	1994	75777	11385	0	55326	70672	0	625	213785	7.40	10.16	67.63	8.83	1581	770
31	1995	74075	11145	0	55161	76173	0	622	217176	7.64	9.33	62.00	8.11	1659	691
32	1996	71978	11235	0	54842	82979	0	621	221655	6.43	9.99	64.00	8.64	1425	719
33	1997	70108	10814	0	54226	88319	0	616	224083	6.12	8.50	55.11	7.37	1372	596
34	1998	68376	10587	0	53619	94254	0	613	227449	7.44	13.46	86.90	11.65	1693	920
35	1999	67286	10080	0	53385	99126	0	609	230486	7.13	12.66	84.52	11.01	1644	852
36	2000	66521	9665	0	52946	104456	0	609	234197	6.32	11.80	81.22	10.30	1479	785
37	2001	65292	9028	0	53117	108206	0	602	236245	6.84	11.73	84.85	10.31	1615	766
38	2002	63683	8891	0	53026	112266	0	599	238465	5.95	10.80	77.38	9.48	1419	688
39	2003	62135	8402	0	52987	116809	0	599	240932	7.24	14.52	107.36	12.79	1745	902
40	2004	60529	7585	0	52973	121058	0	595	242740	6.46	13.99	111.67	12.44	1567	847

COMMONWEALTH OF MASSACHUSETTS  
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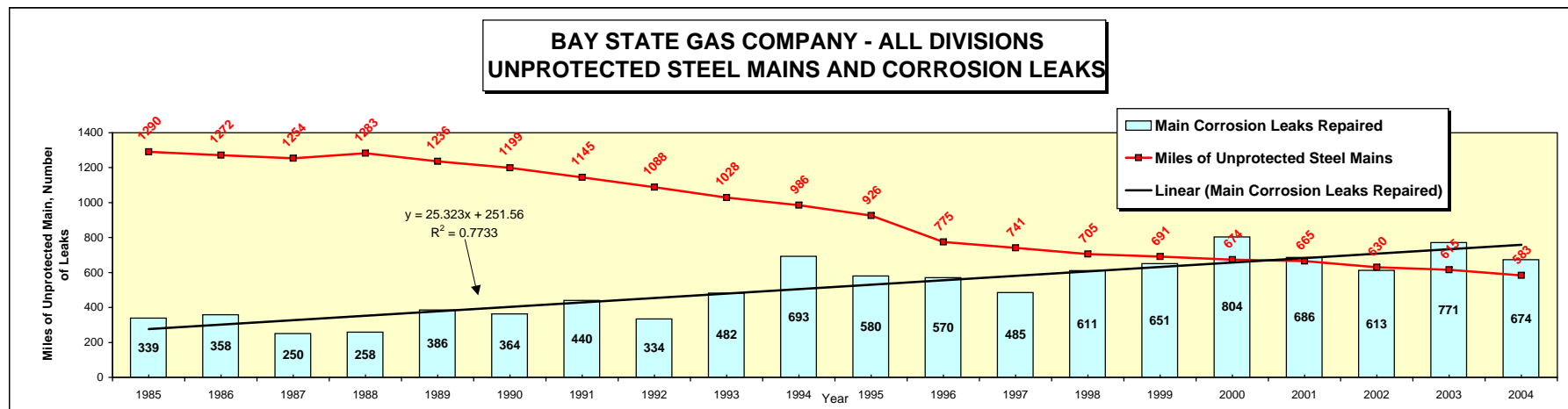
RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE D.T.E.  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-11: Provide background data on regression analysis.

Response: Attachment RR-DTE-11 (a) provides a graph, data set and linear regression statistical summary for the main corrosion leaks repaired. Attachment RR-DTE-11 (b) provides a graph, data set and linear regression statistical summary for the corrosion leaks repaired per mile of bare and coated unprotected steel main.



ALL BSG		MAINS				
Calendar Year	Unprotected Bare Steel	Unprotected Coated Steel	Cathodically Protected Bare Steel	Cathodically Protected Coated Steel	Unprotected Steel Mains	Corrosion Leaks Repaired or Eliminated
1985	636	654	0	1480	1290	339
1986	623	649	0	1500	1272	358
1987	615	639	0	1509	1254	250
1988	721	562	0	1477	1283	258
1989	700	536	0	1524	1236	386
1990	688	511	0	1558	1199	364
1991	677	468	0	1600	1145	440
1992	648	440	0	1650	1088	334
1993	638	390	0	1722	1028	482
1994	624	362	0	1738	986	693
1995	607	319	0	1781	926	580
1996	593	182	0	1925	775	570
1997	580	161	0	1950	741	485
1998	562	143	0	1976	705	611
1999	552	139	0	1985	691	651
2000	542	132	0	1993	674	804
2001	534	131	0	1995	665	686
2002	518	112	0	2011	630	613
2003	506	109	0	2024	615	771
2004	477	106	0	2034	583	674



ALL BSG			
Calendar Year	Data Year	Corrosion Leaks Repaired or Eliminated	Unprotected Steel Mains
1985	1	339	1290
1986	2	358	1272
1987	3	250	1254
1988	4	258	1283
1989	5	386	1236
1990	6	364	1199
1991	7	440	1145
1992	8	334	1088
1993	9	482	1028
1994	10	693	986
1995	11	580	926
1996	12	570	775
1997	13	485	741
1998	14	611	705
1999	15	651	691
2000	16	804	674
2001	17	686	665
2002	18	613	630
2003	19	771	615
2004	20	674	583

#### SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.879377123
R Square	0.773304125
Adjusted R Square	0.760709909
Standard Error	83.33525386
Observations	20

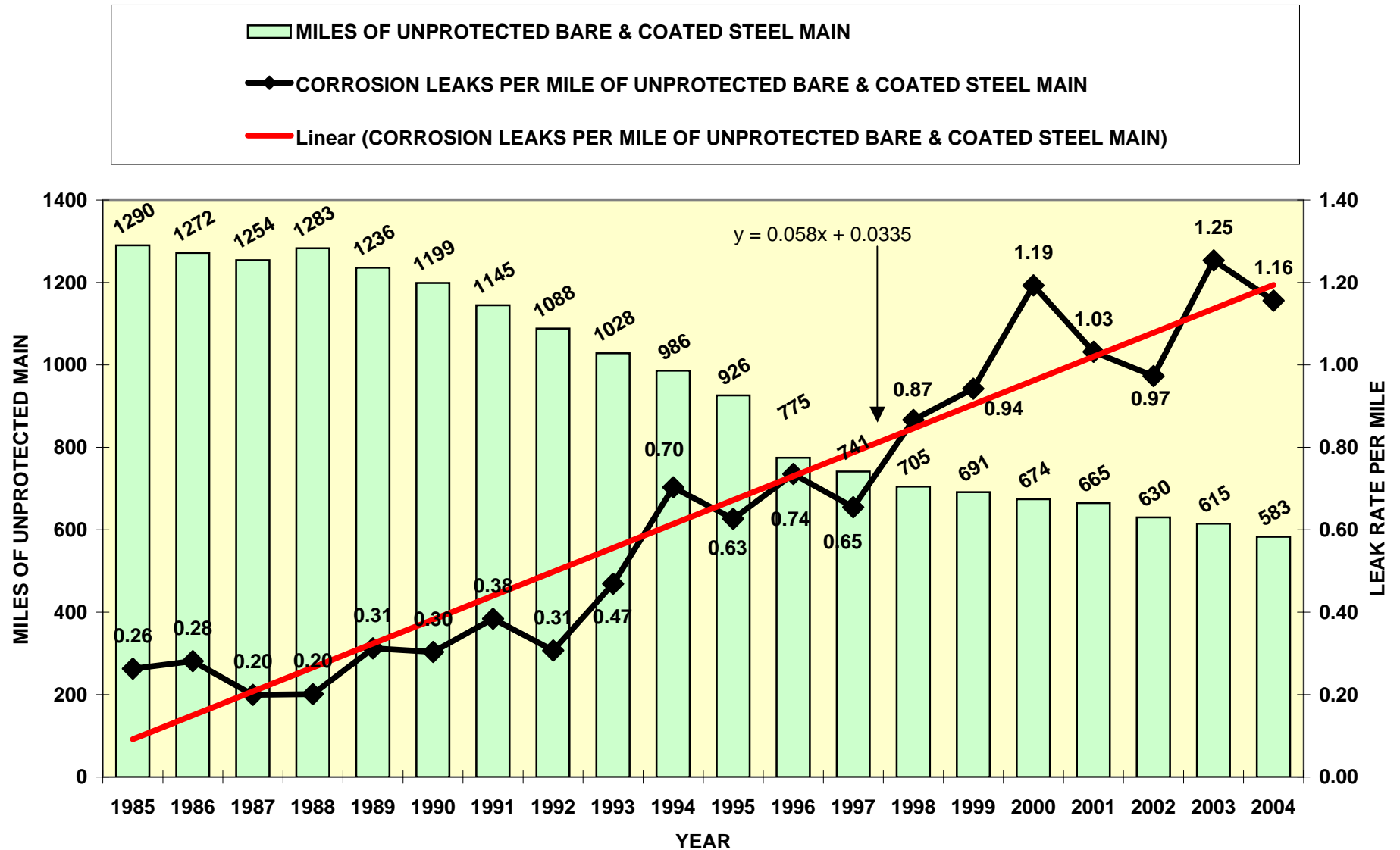
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	426419.19	426419.1883	61.4015	3.28793E-07
Residual	18	125005.76	6944.764536		
Total	19	551424.95			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	251.5631579	38.71184682	6.498350726	4.13E-06	170.2325228	332.893793	170.2325228	332.893793
Data Year	25.32255639	3.231602535	7.835913024	3.29E-07	18.53320615	32.11190664	18.53320615	32.11190664

#### RESIDUAL OUTPUT

Observation	Predicted Corrosion Leaks Repaired or Eliminated	Residuals	Standard Residuals
1	276.8857143	62.114286	0.765778697
2	302.2082707	55.791729	0.687830783
3	327.5308271	-77.53083	-0.9558422
4	352.8533835	-94.85338	-1.1694041
5	378.1759398	7.8240602	0.096459269
6	403.4984962	-39.4985	-0.48695894
7	428.8210526	11.178947	0.137820143
8	454.143609	-120.1436	-1.48119576
9	479.4661654	2.5338346	0.031238491
10	504.7887218	188.21128	2.320371002
11	530.1112782	49.888722	0.615055296
12	555.4338346	14.566165	0.179579609
13	580.756391	-95.75639	-1.18053687
14	606.0789474	4.9210526	0.060669413
15	631.4015038	19.598496	0.241620921
16	656.7240602	147.27594	1.815697887
17	682.0466165	3.9533835	0.048739461
18	707.3691729	-94.36917	-1.16343449
19	732.6917293	38.308271	0.472285196
20	758.0142857	-84.01429	-1.03577381

# **BAY STATE GAS - ALL DIVISIONS** **MILES OF UNPROTECTED BARE & COATED STEEL MAIN** **AND CORROSION LEAK REPAIR RATE PER MILE**



[illegible]

Calendar Year	Data Year	CORROSION LEAKS PER MILE OF UNPROTECTED BARE & COATED STEEL MAIN
1985	1	0.262790698
1986	2	0.281446541
1987	3	0.199362041
1988	4	0.201091193
1989	5	0.312297735
1990	6	0.303586322
1991	7	0.384279476
1992	8	0.306985294
1993	9	0.468871595
1994	10	0.702839757
1995	11	0.626349892
1996	12	0.735483871
1997	13	0.654520918
1998	14	0.866666667
1999	15	0.94211288
2000	16	1.192878338
2001	17	1.031578947
2002	18	0.973015873
2003	19	1.253658537
2004	20	1.156089194

#### SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.955452226
R Square	0.912888956
Adjusted R Square	0.908049453
Standard Error	0.108946158
Observations	20

ANOVA					
	df	SS	MS	F	Significance F
Regression	1	2.238932905	2.2389329	188.63281	5.58052E-11
Residual	18	0.213646777	0.0118693		
Total	19	2.452579682			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.033540409	0.050608917	0.6627371	0.51589633	-0.072785063	0.139865881	-0.07278506	0.139865881
Data Year	0.058024274	0.004224751	13.734366	5.5805E-11	0.049148395	0.066900153	0.049148395	0.066900153

#### RESIDUAL OUTPUT

Observation	Predicted CORROSION LEAKS PER MILE OF UNPROTECTED BARE & COATED STEEL MAIN	Residuals	Standard Residuals
1	0.091564683	0.171226014	1.6147243
2	0.149588957	0.131857583	1.2434655
3	0.207613232	-0.00825119	-0.077812
4	0.265637506	-0.064546313	-0.608695
5	0.32366178	-0.011364046	-0.107167
6	0.381686054	-0.078099732	-0.736509
7	0.439710329	-0.055430853	-0.522733
8	0.497734603	-0.190749309	-1.798836
9	0.555758877	-0.086887282	-0.819379
10	0.613783151	0.089056605	0.8398365
11	0.671807425	-0.045457533	-0.428681
12	0.7298317	0.005652171	0.0533021
13	0.787855974	-0.133335056	-1.257399
14	0.845880248	0.020786419	0.1960236
15	0.903904522	0.038208358	0.3603189
16	0.961928797	0.230949542	2.1779391
17	1.019953071	0.011625877	0.1096363
18	1.077977345	-0.104961472	-0.989825
19	1.136001619	0.117656917	1.109548
20	1.194025893	-0.0379367	-0.357757

COMMONWEALTH OF MASSACHUSETTS  
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RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE D.T.E.  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-12: Provide the Department with the data request that contains a listing of the total number of class 1, 2 and 3 leaks.

Response: Please see Information Request DTE-3-12 for a listing of the total number of class 1, 2 and 3 leaks.

COMMONWEALTH OF MASSACHUSETTS  
DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE D.T.E.  
D.T.E. 05-27

Date: July 12, 2005

Responsible: Danny G. Cote, General Manager

RR-DTE-13: Please provide a list of specific research projects - not general program ideas - that BSG intends to fund with ratepayer funds. For each project please provide: the date (month and year) the project began; GTI annualized budget; BSG's annual contribution; expected end date; amounts contributed by other entities (list entities); expected benefits to BSG in \$/year.

Response: Bay State Gas intends to participate in the Operations Technology Development (OTD) program as well as specific environmental projects with the Environmental Issues Consortium (EIC). The OTD program allows the utility to fund specific projects that will have direct benefit to the utility and it's ratepayers. Based on the current slate of OTD projects and operational needs of Bay State Gas Company, it is anticipated that Bay State Gas would invest in the projects identified in Attachment RR-DTE-13 (a).

Please see Attachment RR-DTE-13 (a) for additional project details, financial details and benefits analysis. Attachment RR-DTE-13 (a) provides project details and budget information along with a summary of expected benefits. Attachment RR-DTE-13 (b) is a benefits calculation summary that lists both quantifiable and intangible benefits of the proposed research projects.

Other entities and their project co-funding levels are considered confidential information to the Operations Technology Development, Inc. Therefore, Bay State Gas has supplied an aggregate co-funding level inclusive of all other entities. This data can be found on Attachment RR-DTE-13 (a) in the column labeled "Cofunding by Other Entities".

The nature of these research projects and others within the OTD and similar programs results in benefits such as cost savings and avoidance, environmental compliance and increased safety of both the general public and utility employees. The expected benefits in Attachment RR-DTE-13 (a) are an estimate of expected cost savings and do not include intangible benefits as listed in Attachment RR-DTE-13 (b).

(Financials are in \$000)

Project	Date Project Began	Expected End Date	2003 & 2004 Budget	2005 Budget <sup>1</sup>	2006 Budget <sup>1</sup>	BSG Funding 2003 & 2004	Proposed BSG Funding 2005 <sup>2</sup>	Proposed BSG Funding 2006 <sup>2</sup>	Cofunding by Other Entities	Expected Annual Benefits <sup>3,4</sup>
Underground Facility Pinpointing	09/03	11/05	503	177	45	167	0	10	548	20
Remote Leak Survey Using Laser	03/04	02/06	215	187	63	15	0	20	430	58
Non-Interrupted Meter Change Out Kit	04/04	11/06	270	243	291	50	0	50	704	342
Improving Crew Truck and Equipment Productivity	01/05	12/06	0	130	70	0	0	20	180	50
Continued Development of Inflatable By-Pass Stopper and Repair	01/05	12/05	0	125	0	0	0	0	125	20
Development/Enhancement of Trenchless Service Installation Through Keyholes	04/04	10/06	185	203	112	16	0	25	459	50
Camera Inspections on Live Mains thru Keyholes	01/05	12/06	0	135	141	0	0	30	246	20
Reserve for new 2006 OTD projects								68		
Linking MGP Fuels to MGP Byproducts with Stable Carbon Isotopes	07/05	12/06	0	13	27	0	0	27	13	25
Totals:			1,173	1,213	2,386	248	0	250	2,692	584

Footnotes:

- Budget figures as of July 7, 2005. Budgets are subject to change based on project results and guidance from investors.
  - 2005 and 2006 budget estimates may change based on success of projects, available cofunding by other entities and introduction of new projects of interest to BSG. The OTD program allows each utility to allocate funds to projects of greatest value to their utility and ratepayers. Therefore, budgeting and funding levels are dynamic in nature.
  - Expected annual benefits were calculated in RR-DTE-13 Attachment A - Sheet 2. Expected annual benefits assume the following:
    - Assumes project achieves technical success and becomes a commercially viable product/process.
    - Timing of annual benefits may vary based on time required to bring product/process to market, implementation timeframe for utility operations, learning curve and training required for efficient operations.
  - Expected annual benefits were calculated based on the above listed projects which are of high value to BSG. Within the OTD program, OTD members have access to all projects undertaken (See AG-18-01 Attachment B for list of all current OTD projects), therefore additional indirect benefits and leverage of research funding will be realized.
- These savings estimates do not include possible capital costs of implementing the various technologies.

### Underground Facility Pinpointing

**Benefits:**

- Minimize third party damage to gas facilities
- Minimize cost to repair gas facilities
- Increase safety for general public and utility workers

**Quantifiable Benefits:**

Average cost to repair third party damage (industry survey):	\$800
Assume avoidance of 25 damages per year:	25
Estimated annual cost avoidance:	\$20,000

### Remote Leak Survey Using Laser

**Benefits:**

- Increase productivity of walking survey

**Quantifiable Benefits:**

Average services walked per man-day (industry survey):	123
Annual services per year surveyed for Bay State Gas:	100000
Assume 30% of services could be surveyed via mobile laser:	0.3
Assume laser productivity of 300 services per day:	300
Assume fully loaded man-hour costs per hour:	\$50
Assume 8 hour work days:	8
Current walking survey cost:	\$97,561
Calculation: (services/yr)*(30%)*(hr/day)*(\$/hr)/(services/day)	
Proposed walking survey cost:	\$40,000
Estimated annual cost savings:	\$57,561

### Non-Interrupted Meter Change Out Kit

**Benefits:**

- Minimize appointment making for meter change outs
- Decrease customer inconvenience
- Increase productivity
- Minimize missed appointments and return trips
- Minimize customer reights of equipment

**Quantifiable Benefits:**

Bay State Gas meter changes per year:	40000
Less 10% - 15% commercial/industrial meters:	5000
Net residential meters:	35000
Assume applicability to 50% of meters:	0.5
Estimated meter applicability per year:	17500
Existing meter changes per day (average):	6
Proposed meter changes per day:	8
Existing cost per meter change:	\$67
Calculation: (8hrs/meters per day)*(\$/hr)	
Proposed cost per meter change:	\$50
Estimated savings per meter change:	\$17
Estimated annual cost savings from productivity increase:	\$291,667
Calculation: (savings per meter)*(# meters)	

Reduction in appointment making & scheduling (man-year):	0.5
Man-days:	125
Hours per day:	8
Fully loaded hourly rate:	50
Estimated annual cost savings from appointments/scheduling:	\$50,000

Total estimated annual savings:	\$341,667
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### Improving Crew Truck and Equipment Productivity

**Benefits:**

- Improved ergonomics
- Healthier workforce
- Reduction in lost time / workers compensation claims
- Increase in productivity



#### Advanced electronics and real-time data communications exchange

##### Quantifiable Benefits:

Average lost time accident cost (industry survey, \$20 - \$30K):	\$25,000
Assume prevention of 2 lost time accidents per year:	2
Estimated annual cost avoidance:	\$50,000

#### Inflatable Bypass Stopper

##### Benefits:

- Maintain gas service during third party damage
- Minimize inconvenience to gas customers
- Increase utility worker and general public safety

##### Quantifiable Benefits:

Assume average time to relight per incident (man-hours):	40
Fully loaded hourly rate:	\$50
Average cost to relight per incident:	\$2,000
Assume usage per year:	10
Estimated annual cost avoidance:	\$20,000

#### Trenchless Service Installations Through Keyhole

##### Benefits:

- Reduced cost of providing natural gas service to both new and existing customers
- Reduce pavement and landscaping restoration
- Minimize public inconvenience from traffic congestion and roadway/sidewalk disturbance

##### Quantifiable Benefits:

Assume savings per service installation or renewal:	\$100
Assume applicability to 500 services per year:	500
Estimated annual cost savings:	\$50,000

#### Camera Inspection on Live Mains Through Keyhole

##### Benefits:

- Minimize time to identify distribution issue
- Minimize excavation and restoration costs
- Minimize inconvenience (outage) to gas customers
- Minimize inconvenience to general public

##### Quantifiable Benefits:

Assume time savings of 2 days for 2 man crew for distribution investigation (man-hours):	32
Fully loaded hourly rate:	\$50
Labor savings per use:	\$1,600
Excavation / restoration savings per use:	\$400
Estimated savings per use:	\$2,000
Assumed usage per year:	10
Estimated annual cost avoidance:	\$20,000

#### Linking MGP Fuels to MGP Byproducts

##### Benefits:

- Determination of where and how wastes were originated
- Improve estimation of contamination age
- Proving or disproving waste liability
- Reduction in litigation expense

##### Quantifiable Benefits:

Cost savings are very much dependent on site findings/testing and determination of liability.	
Estimate savings per year:	\$25,000

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RESPONSE OF BAY STATE GAS COMPANY TO  
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D.T.E. 05-27

Date: July 12, 2005

Responsible: James Harrison, Consultant

RR-DTE-24: Provide a page and line reference for the numbers in rows 2 and 5 through 10, Sch. JLH-2-1, pp. 5 (sequential page 5-143).

Response: The following are the references for Line 2:

Column 4	\$20,756,691	Workpapers Exh. BSG/JLH-2, Page 234, the sum of Lines 2 to 4 and 23, Total Company column.
Column 5	\$19,840,295	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 15 of 92, the sum of Lines 2 to 4 and 23, Total Company column.
Column 6	\$916,396	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 15 of 92, the sum of Lines 2 to 4 and 23, Total Company column.

The following are the references for Line 5:

Column 4	\$324,558,618	Workpapers Exh. BSG/JLH-2, Page 238, Line 7, Total Company column.
Column 5	\$0	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 19 of 92, Line 7, Total Company column.
Column 6	\$324,558,618	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 19 of 92, Line 7, Total Company column.

The following are the references for Line 6:

Column 4	\$99,528,001	Workpapers Exh. BSG/JLH-2, Page 246, Line 32 less Page 238, Line 7, Total Company column.
Column 5	\$86,294,456	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 27 of 92, Line 32 less Page 19 of 92, Line 7, Total Company column.

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RR-DTE-24, Continued

Column 6	\$13,232,547	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 27 of 92, Line 32 less Page 19 of 92, Line 7, Total Company column.
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The following are the references for Line 7:

Column 4	\$28,800,958	Workpapers Exh. BSG/JLH-2, Page 250, Line 20 less Line 19, less Page 248, Line 7, Total Company columns.
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Column 5	\$28,159,855	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 31 of 92, Line 20 less Line 19, less Page 29 of 92, Line 7, Total Company columns.
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Column 6	\$641,102	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 31 of 92, Line 20 less Line 19, less Page 29 of 92, Line 7, Total Company columns.
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The following are the references for Line 8:

Column 4	\$6,552,895	Workpapers Exh. BSG/JLH-2, Page 248, Line 7 plus Page 250, Line 19, Total Company columns.
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Column 5	\$6,403,782	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 29 of 92, Line 7 plus Page 31 of 92, Line 19, Total Company columns.
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Column 6	\$149,113	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 29 of 92, Line 7 plus Page 31 of 92, Line 19, Total Company columns.
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The following are the references for Line 9:

Column 4	\$10,067,165	Workpapers Exh. BSG/JLH-2, Page 252, Line 13, Total Company column.
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Column 5	\$9,775,482	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 33 of 92, Line 13, Total Company column.
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Column 6	\$291,685	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 33 of 92, Line 13, Total Company column.
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RR-DTE-24, Continued

The following are the references for Line 10:

Column 4	\$72,506	Workpapers Exh. BSG/JLH-2, Page 252, Line 19, Total Company column.
Column 5	\$72,506	Exh. BSG/JLH-2, Schedule JLH-2-2, Page 33 of 92, Line 19, Total Company column.
Column 6	\$0	Exh. BSG/JLH-2, Schedule JLH-2-3, Page 33 of 92, Line 19, Total Company column.

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DEPARTMENT OF TELECOMMUNICATIONS AND ENERGY

RESPONSE OF BAY STATE GAS COMPANY TO  
RECORD REQUESTS FROM THE D.T.E.  
D.T.E. 05-27

Date: July 12, 2005

Responsible: James Harrison, Consultant

RR-DTE-25: For the record, explain the difference or reconcile the difference between \$7,118,165 of bad debt expense from Mr. Ferro's schedule with your \$7,082,443 in Sch. JLH-3-14, page 5 of 5.

Response: The difference between the two bad debt amounts is that the \$7,082,443 in Exh. BSG/JLH-2, Schedule JLH-2-4, Page 12 of 31, Line 25, Production column represents the functionalized bad debt expense. This is the bad debt expense produced by functionalizing the pro forma uncollectible accounts expense identified by Mr. Skirtich in the cost of service study.

The \$7,118,165 of bad debt expense shown in Exh. BSG/JAF-1, Schedule BSG/JAF-1-1, Sheet 2 of 2, Line 22, Column 3, represents the Indirect Bad Debt Revenues for the test period. This amount is included in present revenues in the cost of service study. See Workpapers Exh. BSG/JLH-2, Page 287, Line 6. The total of Lines 2 through 9 equals Line 1. The total of Line 1 is shown on Page 234, Line 1.